Apple IIGS

The Buyer's Guide

A Redgate Publication
Summer 1988, $2.95 U. S.

Special Creativity Issue:

Making Music On The Apple IIGS
Art For Non-Artists
Four All-American Games Compared
RAM Aerobics
First Look At The ImageWriter LQ
Nearly 300 Apple IIGS Product Descriptions

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Versatile data storage.

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You can even use our 360K PC compatible drive for ProDOS storage and a 143K Apple 5.25″ drive for MS-DOS storage.

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PC Transporter memory choices.

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768K	**640K**	**639.00**

Note: The IBM mode is 128K less because the PC Transporter uses 128K for system memory.

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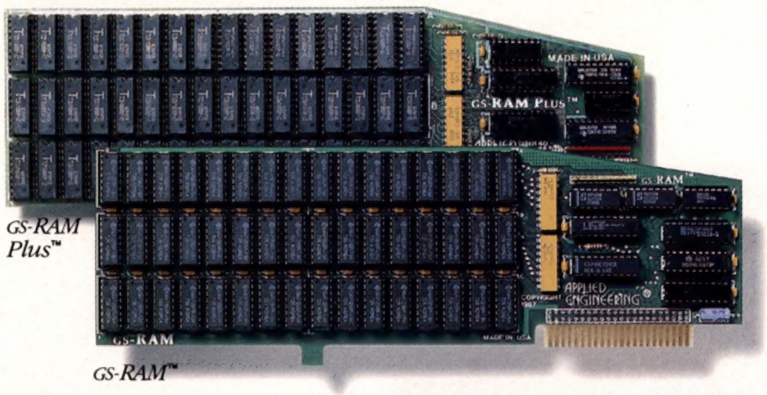

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GS-RAM™

GS-RAM has an all new design. A design that delivers higher performance including increased speed, greater expandability, and improved software.

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GS-RAM works with all IIGS software. In fact *any* program that runs on Apple's smaller memory card runs on the GS-RAM. But with GS-RAM you can have more memory, improved performance, and almost unlimited expansion capabilities. We've designed the new GS-RAM to be easier to use too—you don't have to adjust the size of your RAM disk every time you use a DMA device. No other RAM card with more than 4 banks of memory installed can make the same claim.

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Making AppleWorks Even Better

Applied Engineering's Expander program eliminates AppleWorks internal memory limits allowing it to recognize up to 8 megabytes of desktop workspace. You can increase the limits from only 7,250 lines to 22,600 lines in the word processor and from 6,350 records to 22,600 records in the database. The Expander allows all of AppleWorks, including print functions, to automatically load into RAM. The clipboard size will increase from 255 to 2,042 lines maximum. GS-RAM will automatically segment larger files so you can save them onto multiple floppies. And GS-RAM provides a built-in print buffer that allows you to continue working in AppleWorks while your printer is still processing text. You can even load Pinpoint or MacroWorks and your favorite spelling checker into RAM for instant response.

Grow by Kilobytes or Megabytes

We offer GS-RAM in two configurations so you can increase your memory 256K at a time (GS-RAM) or a megabyte at a time (GS-RAM Plus). Both are IIGS compatible and both come with our powerful enhancement software. GS-RAM can hold up to 1.5 MEG of 256K chips and GS-RAM Plus can hold up to 6 MEG using 1 MEG chips. And since both use standard RAM chips (not high-priced SIMM's), you'll find expanding your GS-RAM or GS-RAM Plus easy, convenient, and very economical. For further expansion, you can plug a 2 MEG "piggyback" card into the GS-RAM's expansion port for up to 3.5 MEG of total capacity. Or up to a whopping 8 MEG on GS-RAM Plus. If a GS-RAM owner outgrows 3.5 MEG, he can easily upgrade to GS-RAM Plus for a nominal charge.

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With our RamKeeper™ back-up option, your GS-RAM or GS-RAM Plus will retain both programs and data while your IIGS is turned off! Now when you turn your IIGS back on, your favorite software is on your screen in under 4 seconds! With RamKeeper you can divide your IIGS memory into part "electronic hard disk," and part extended RAM. Even change the memory boundaries at any time—and in any way—you want. Because Applied Engineering has the most experience in the industry with battery-backed memory for the Apple, you are assured of the most reliable memory back-up system available. And in the world of battery-backed memory, *Reliability* is everything. That's why Applied Engineering uses state-of-the-art "GEL-CELL's" instead of Ni-Cad batteries (if Ni-Cads aren't discharged periodically, they lose much of their capacity). RamKeeper has about 6 hours of "total power failure" back-up time. That's 6 times the amount of other systems. But with power from your wall outlet, RamKeeper will back-up GS-RAM, GS-RAM Plus, or most other IIGS memory cards indefinitely. Should you ever have a "total power failure," RamKeeper switches to its 6-hour battery. When power returns, RamKeeper will automatically recharge the battery to full power. RamKeeper incorporates a dual-rate charger, status L.E.D.'s, and advanced power reducing circuitry. RamKeeper comes *complete* with battery, software, and documentation.

"In quality, performance, compatibility, expandability and support, Applied Engineering's GSRAM and GSRAM Plus are number one."

Steve Wozniak, the creator of Apple Computer

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Publisher: **Len Scaffidi**
Vice President/Editor-In-Chief: **Paul Pinella**
Directory Editor: **Paulette Siclari**
Production Manager: **Carolyn D. Sizemore**
Assistant Directory Editor: **Catherine L. Spencer**
Quality Control Manager: **Ron Errett**
Proofreader: **Linda W. Hill**
Staff Writer: **Linda Topoleski**
Contributing Editors: **Philip Chien; Carol S. Holzberg, Ph.D.; Ken Landis**
Other Editorial Management: **Jordan Gold**
Assistant To The Publisher: **Mary J. Spoto**

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Typesetting Operations: **Debra R. Siraco, Sharon L. Thomas; Vicki Rae Vadnais**

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Subscription Processing Coordinator: **Karen Lindsey**
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Western Advertising Sales Director: **Chuck Abrams**
Redgate Communications Corporation, 185 Berry St., Ste. 5401, San Francisco, CA 94107, 415-777-3911
Eastern Advertising Sales Director: **George Laughead**
Redgate Communications Corporation 24 New England Executive Park, Burlington, MA 01803, 617-229-6500
Advertising Sales: **Sandy Van Salisbury**
Redgate Communications Corporation, 660 Beachland Boulevard, Vero Beach, FL 32963, 407-231-6904
Response Services: **Tammy Smith**

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Package Imperfect

A lot of good software has been developed for the Apple IIGS, but you'd never know it from the packaging. Only a few vendors — perhaps the ones far removed from Madison Avenue — take the effort to clearly label packages with essential information needed by users. Simple clues, such as operating system information, are often left off the boxes, as are details about copy protection, memory requirements, system requirements and so forth.

Another telltale bit of information often omitted is whether a package is truly "IIGS specific." More than a few packages crossing my desk have left me puzzled. Is it or isn't it?

A program doesn't have to be IIGS specific to be great. AppleWorks is a good example. Sure, AppleWorks can take advantage of certain IIGS features, such as increased speed and memory capacity, but it also runs fine on earlier Apples. New packages, such as Springboard Publisher, show there's still room to be innovative in the Apple II world without being IIGS specific.

Nevertheless, nobody buys an Apple IIGS unless they intend to use all those nifty features that dazzle the computer store crowds, including clever use of color, speed and (if the budget allows) stereo sound. In my book, the only kind of program that can do these things is written under ProDOS 16, understands memory management, nurtures the Finder and fully supports the Apple interface.

Not all programs that cling to this recipe will be superstars, of course. Under certain circumstances, such as telecommunications, following the IIGS formula can be more a hindrance than help. Even so, many potential buyers want features that best support their IIGS investment. How can they know unless the package says so?

My biggest gripe, which seems to be shared by our readers, is with products that come to market with fuzzy credentials. For example, products that boast in big bold letters that they "Run On The Apple IIGS," but never say whether they come with a 3.5-inch disk or take advantage of any IIGS features.

Another class of fuzzy product made even fuzzier by packaging involves a few games, educational packages and similar programs. Yes, they are IIGS specific. That is, they demand up to a megabyte of memory, access the sound chip and run only on a IIGS. But they may not necessarily follow Apple's guidelines. In fact, they may not even be written under a standard operating system.

If your only intent is to boot these programs and run, fear not. But don't try loading them onto a hard disk or using desk accessories at the same time.

Vendors have a right not to follow Apple's standards for whatever reason. Potential buyers of their products have an equal right to know exactly what they are getting. At the moment, the buyers are not getting the information they need from packaging.

Perhaps the marketing moguls on Madison Avenue should set aside three square inches of space on every software package. Let the programmers describe here, in their own words, what makes up their creations. The copy may not win any awards, but it certainly will be read. ■

— Paul Pinella, Editor-In-Chief

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The editors of* The Apple IIGS Buyer's Guide *and Contributing Editor Philip Chien answer letters and questions from readers.

1) I'm moving to Europe in a couple of months and I'd like to take my Apple with me. The power I'm going to be using is 220 volts (v)/50 hertz (hz) AC, as opposed to the 120v/60hz AC in the United States. What problems can I expect?

Gerard Mollet
Fort Rucker, Alabama

Most, although not all, Apple peripherals will work fine with a step-down transformer. Make sure you are using a fully isolated, grounded, three-prong step-down transformer, not a little $9.95 model designed for use with an electric shaver.

Frequency is another problem. U.S current works at 60hz, but most European nations use 50hz. *Do not* try to use a LaserWriter, ImageWriter II, ImageWriter LQ, Scribe or Apple Color Plotter at 50hz; you will probably damage the printer. The ImageWriter I works fine at 50hz, although there may be spacing problems between characters.

Also, remember that U.S. Apple computers produce NTSC video. If you try to hook up your computer to a PAL or SECAM monitor (two video standards used in Europe), you won't get correct results. Make sure you use an NTSC monitor on your Apple, even while in Europe. Apple's Monitor II, Monitor IIc and Monitor III should work fine at 50hz, although there may be a slight on-screen flicker.

Given the above limitations and a good step-down transformer, the following Apple brand-name accessories will work fine at 120v/50hz: Apple II, IIe, IIc, IIGS, ImageWriter I printer, Monitor II, IIc and III. Many third-party products will also work, but make sure the U.L. listing says 50/60hz.

Don't forget that your warranty is only valid in the country where you purchased your Apple, and international dealers might not have the parts or capabilities to service your machine. If they do offer to service your Apple, expect to pay extra for the privilege.

By the way, you can easily reset the character set and keyboard map on an Apple IIGS for a variety of different languages. Just go into the Control Panel and choose Options.

Apple ImageWriter and ImageWriter II printers both include built-in foreign character sets that can easily be accessed through software. Plus, many software publishers now produce foreign language versions of their programs with the manuals and on-screen displays re-written in a variety of languages.

2) A IIGS function that would be ideal for me would be if somehow the combination of OctoRAM ESP and SoftSwitch would allow me to load my database program, a word processor and something similar to Printrix into ROM, then let me select which one would start running at power up. Is that possible?

Also, do you know of anything that will scan text into a word processor file? Such a tool would be great for inputting programs from magazines or books.

I have no need for multicolor printing. Will my present ImageWriter I printer work properly with an Apple IIGS?

If I get an Apple IIGS, will its built-in serial printer interface let me use my present Super Serial card for communication with a 1,200-baud external modem?

Finally, do you know of any IIGS telecommunications program that works with the Kermit file transfer protocol and emulates a VT100 terminal?

Mark Harris
San Diego

First, let's get our terms straight. ROM stands for read-only memory. The ESP board acts like both a RAM and ROM board. Like a ROM board, it holds its memory when a IIGS' power is turned off. Like a RAM board, the memory can be modified as needed. The technical term is battery-backed static RAM, and a small battery is used to keep the memory powered while a IIGS is turned off.

The OctoRAM ESP board has the advantages of both RAM and ROM. The ESP board "looks" like a disk drive to a IIGS and holds up to 512K of RAM. In fact, you can set up a IIGS to automatically run a program on the ESP board when you turn on the computer. All you have to do is initialize the ESP board and put your programs into its memory.

The major limiting factor is that an ESP board can only hold about 75 percent of the capacity of a 3.5-inch disk. You should be able to fit a small database program, a word processor and Printrix without any problems. You may not have enough space to also fit SoftSwitch within the 512K confines, however.

If you require more than 512K of programs, Checkmate Technology's MemorySaver or Applied Engineering's RamKeeper can convert the memory on your present IIGS RAM expansion board into a ROM disk. A variety of different ProDOS program selector programs can be used for a menu selector to choose which program you want when you turn on your computer.

Incidentally, if you already have an Apple IIe and don't need the music or sound capa-

AT LAST...
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Didn't you buy your Apple IIGS for its incredible integration of data, pictures and sound? **SoftWood GS File** is the only database manager on the Apple IIGS which can manage all that information *together!*

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Reader Circle Number 4

bilities of an Apple IIGS, using SoftSwitch with the ROM disk applications is still an excellent reason to upgrade to an Apple IIGS.

Scanning graphics into a computer is relatively easy. Scanning text requires an intelligent program that can recognize characters. In addition, different character fonts are difficult to tell apart. It's quite easy for a human to recognize thousands of different fonts, not so for a computer. Handwritten characters are even more difficult to tell apart.

Even with all the limitations, there have been a couple of optical character readers released. One product is Omni-Reader. It looks like a copy stand and includes a reader that you move across a page with your hand. Data is transmitted as text to your computer's RS-232 interface. That's the good news.

The bad news is that Omni-Reader is only about 95 percent accurate, and that's only with relatively standard text fonts. The other bad news is, the company that made it went out of business.

Mail order firms are now selling Omni-Reader for under $200. You might want to check with California Digital (800-421-5041) to see if they have any left in stock.

Apple has informed us that most IIGS programs that use the standard Apple printer routines will work with the ImageWriter I as well as the ImageWriter II. For the most part, programmers design programs to be compatible with as many users as possible, and programs designed for the ImageWriter I work just as well on the ImageWriter II.

Consequently, most graphics programs are designed to work with the ImageWriter I. These programs occasionally have extra features (e.g., color) available as options in case you have an ImageWriter II.

You will need a new cable to attach an ImageWriter I to a IIGS, because the IIGS uses the new sub-8 connector and your current Super Serial card uses the older DB-25 connector. The cable is available from your Apple dealer or through a variety of mail order firms.

Even if you don't need color printing, you may still want to consider purchasing an ImageWriter II. It is twice as fast as an ImageWriter I and includes an excellent high-quality text mode. Best of all, your current ImageWriter I ribbons and software will work with an ImageWriter II.

An Apple IIGS includes two built-in serial ports, traditionally referred to as the printer and modem ports, although you can use any two serial devices you want. When you purchase a IIGS, you won't need your Super Serial card, unless you want a third serial port or your software specifically requires a Super Serial card.

You can easily hook up your present ImageWriter I to a IIGS' printer port via a new cable. You can also use either your Micromodem II or an internal or external 1,200-baud modem with the IIGS' second serial port (the modem port).

This will only work if your programs are compatible with a IIGS' serial ports. Many older programs require either the Super Serial card or the Micromodem II card. They won't work with the IIGS serial interface.

According to Checkmate Technology, Proterm version 2.0 is supposed to handle VT100 emulation, Kermit and Xmodem transfer protocols, and a lot more. Yes, it will work with your Micromodem II, Super Serial card or IIGS serial port. You can even attach your Apple directly to your DEC mainframe for ultrahigh-speed communications.

3) I recently purchased the game Hacker II for my IIGS. I was unable to boot the program on my computer and I couldn't figure out what was wrong. I called Activision's support department, and they said they were aware of the problem. The support person explained the difficulty was because of the upgraded ROM in my IIGS and that the company was working on a revised version of the game.

I believe Activision should recall all existing copies of this software from its distributors so these copies don't pose any inconvenience or frustration to potential consumers.

Jane Santo
Scarsdale, New York

We agree with you in principle. Companies should not sell software that doesn't work with current computers. However, the situation is more complicated than you might expect.

When Activision first released Hacker II, it worked fine with the Apple IIGS. That's because all users had the same original system ROM. After a computer has been in the field for some time, documented bugs begin to appear. Customers, especially software companies, ask the manufacturer to fix the problems and to add newer features.

Apple responded to these requests with the updated system ROM in your computer. Naturally, software developers, who also receive these updated ROMs for their machines, check all of their programs for compatibility. The trouble is, by the time most software developers receive their new ROMs, the newest Apple IIGS's off the assembly line also have the new ROMs, and current users are starting to get the updated ROMs through their dealers.

It is in Activision's highest interest to get its products updated as fast as possible and to upgrade customers who already have copies of Hacker II. The trouble is, what do you do about the hundreds or even thousands — in the case of a large company such as Activision — of copies that have been sent through distributors, mail order firms and retail dealers?

Most companies will offer free or low-cost (typically $5 to $10) upgrades for their customers when a product doesn't work properly because of a program revision. Occasionally, a company will let you upgrade through a local dealer, but most upgrades are performed directly by the manufacturer.

Upgrades are a hassle everybody has to deal with. The alternative — not to ever upgrade or improve the Apple IIGS world — is a hundred times worse.

What should you do? Ask your software dealer what his policy is concerning refunds or credit for software that doesn't operate on your computer.

Unfortunately, dealers have to be wary. There are people who will purchase software, copy it illegally and then return the original copies to the dealers claiming they're defective or they don't operate on their machines. Most knowledgeable dealers, however, should be able to confirm whether a specific program works on your machine. Always check this out.

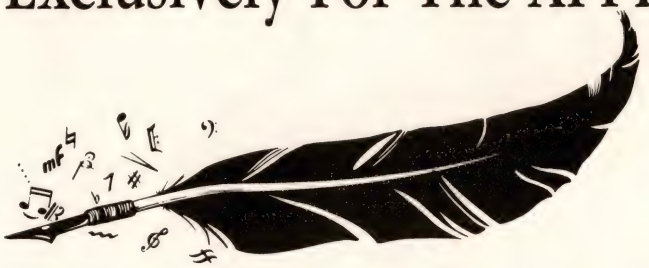
4) Do you have any information on future AppleFest shows? Unfortunately, I wasn't able to make the show in San Francisco last September. From your description in the Winter 1988 issue, it sounded fascinating.

Wendell Harness
Riverside, California

The next AppleFest will be held in Boston on May 20 to 22. After that, the next show is scheduled for fall in San Francisco. Call 1-800-262-FEST or 617-860-7100 in Massachusetts for details. ■

Pyware™ Music Writer

Designed Exclusively For The APPLE IIGS



From Beginner To Professional Composer

The Pyware™ Music Writer is the perfect music notation and composition tool for any composer at any level. With the Music Writer you can play in your music with a synthesizer, see it displayed on the screen, play it back through your synthesizer or Apple IIGS sound chip and print the music on your ImageWriterII ready to be published.

The Pyware™ Music Writer supports the beginning music hobbyist or student with a step by step guide to basic music theory and composition. If you know how to write music and are searching for a music program that will utilize all the features of the Apple IIGS and allow you to quickly input and edit your music, you have found that tool.

Input and editing which are the most time consuming parts of music writing are a breeze. The Music Writer offers automated error checking, lyrics, extensive use of the Apple IIGS sound chip, MIDI input and output, and that is just the beginning. The program provides easy editing through copy, cut, paste, invert and transpose. A quality print out of parts, range of parts, or score formats are just as easy to produce.

With all this power, the Music Writer is still very simple to use because of the Apple IIGS user interface, pull down menus and icons.

As mentioned, the Music Writer is the perfect music tool for any composer at any level. Three levels of the Music Writer are available for the Apple IIGS. Two are available for the Apple IIe.

LEVEL 1 - (LIMITED EDITION) - Designed for the beginning music student or music hobbyist. It is limited to 3 staves and is great for single part writing. It contains a music theory guide along with the manual so that you may learn basic music theory, notation and composition.
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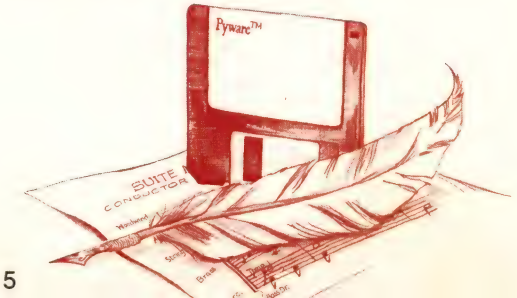

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Reader Circle Number 5

Making Music On The Apple IIGS

The potential for creating music is locked inside your Apple IIGS. Here's what it takes to get it out.

A year ago, we took an early look at music applications on the IIGS. Since then there have been a variety of improvements in the Apple music field. Both hardware and software products have gotten better, and in many ways the IIGS is becoming the computer of choice for musicians everywhere.

In previous issues, we've reviewed the Music Construction Set and Instant Music from Electronic Arts, the FutureSound stereo output/digitizer board from Applied Visions and other music products. Since those reviews were printed, a popular music generator program has been enhanced and other hardware and software products have been released by a variety of companies.

In The Studio

Activision's Music Studio, a case in point, has evolved into a choice product for amateur and professional musicians. It supports up to 16 instruments, prints out music scores on an ImageWriter printer and lets you connect your IIGS to other electronic musical instruments.

The original Music Studio version had several limitations. The tones it produced, while adequate, always sounded computer generated. All note stems faced the same direction, producing confusing printouts, and the mouse input did not allow for easy input of complicated chords.

Perhaps the most glaring oversight, however, was the user interface. Music Studio looked like an Atari or Amiga program — not a Macintosh/IIGS program! The program menus operated identically to their predecessors on other machines, but differently than the menus IIGS users had grown accustomed to.

We reviewed a beta copy of the new Music Studio that corrects all these problems and adds some excellent enhancements. Most importantly, Music Studio 2.0 now uses the Apple standard interface. Your mouse and screen controls will act the way you expect them to, which is similar to other Macintosh/IIGS programs.

While this is a vast improvement over the older Amiga-style interface, Activision still needs to correct some minor inconsistencies. For example, the printout screen should have a Chooser command added for LaserWriter support, and only sound files should be displayed when you want to load a sound file. Also, the trash can should be replaced with a standard close box for song files. These are minor quibbles, but if you're going to use a standard, you should use that standard correctly.

Other program bugs have also been addressed. Stems can now be reversed simply by pressing the space bar before dropping notes. You can attach a keyboard for music input, if you like, and the audio quality has been greatly improved. Other new features include the capability to insert measure bars; change key signature, tempo or volume in the middle of a song; merge songs; change all of the notes of a specific duration to a different duration; and automatic measure bar numbering.

The new version of the program is copyable and can be transferred to a hard drive or backed up with standard copy utilities.

Better Sounds

One of the surprising features of the original Music Studio was that it didn't use a IIGS' special sound capabilities. Each instrument that came with the program was based on a computerized algorithm, including Attack, Decay, Sustain and Release (ADSR). These four parameters create synthesized music.

While adequate for computerized music and sufficient to fool many people, generated waveforms do not produce the complicated waveforms created by true musical instruments.

The new version of Music Studio changes that. Besides its standard set of computer-generated instruments, the program includes a separate disk filled with digitized sounds. The instruments represented were created using the IIGS' Ensoniq sound chip, the same chip used in the Mirage professional music keyboard.

A musical instrument's voice is digitized by the Ensoniq chip in much the same fashion a compact disc (CD) recording is made. Because the actual recording has already been done, all you have to do to get concert-hall sound is select a digitized instrument and play it back.

Fortunately, Music Studio now supports piano keyboard notes through its which stands for Interface — is a standard for musical instru- MIDI-equipped instruments can each other and data

inputting of MIDI interface. MIDI — Music Instrument Digital universal communications computerized ments. All musical "talk" to transfer (sounds) back and forth. With an optional MIDI interface now available from Apple and other companies, Music Studio can communicate with music synthesizers and receive data from them.

If you attach a MIDI-equipped keyboard — via the MIDI output — to the MIDI input on a IIGS-compatible interface, you can play music on the keyboard, which Music Studio will convert to music notation on your computer screen. Naturally, any mistakes you make will also be converted.

The music read routine isn't perfect. For example, it doesn't get the timing or tempo down properly. But those are fairly easy things to adjust from within Music Studio. The most important factor is that you can use a keyboard to input notes and chords in a conventional manner, instead of using a mouse or typing in the notes by hand.

Current Music Studio owners can upgrade to the new version for $13.50. Send page one of your manual and a check for $13.50 (California residents add 6.5 percent sales tax; international customers contact Activision for details) to: Music Update; Activision, Inc.; PO Box T; Gilroy, CA 95021-2249.

Although the original version of Music Studio had problems with the upgraded System ROM, version 2.0 guaranteed to work with original and upgraded

IIGS has been both the ROMs.

A Better Digitizer

In the *IIGS* Fall '87 issue of *The Apple Buyer's Guide*, we reviewed MDIdeas Supersonic stereo board and its Digitizer board. The Supersonic board converts a IIGS' audio output into stereo, and the Digitizer converts audio sounds into computer-readable form. It's basically a digital tape recorder.

The major disadvantage of the Digitizer is that it can only record mono sounds. If you want to record a stereo sound track, you have to record it twice — once for each channel — and hope you get the synchronization correct. You can also tweak it through the software, which is inconvenient at best.

MDIdeas, which promised an upgrade for the Digitizer, showed a prototype at last year's AppleFest show in San Francisco. Well, the new Digitizer Professional now exists, although what we tested is a prototype board. By the time this article is printed, though, off-the-shelf units should be available.

And every other subject.

In short, the IIGS runs programs that cover every area of human endeavor, from writing a school paper to planning a company budget. Kids can study anything from ABCs to SATs. And anyone can learn to paint like Monet or compose like Mozart.*

All this on one of the easiest subjects in the world to master–the Apple IIGS.

Interested?

Then why not pursue this subject with your nearest authorized Apple dealer.

You'll find that once your family sees and hears what the Apple IIGS can do, the idea of owning any other kind of personal computer will be, well, history. The power to be your best.™

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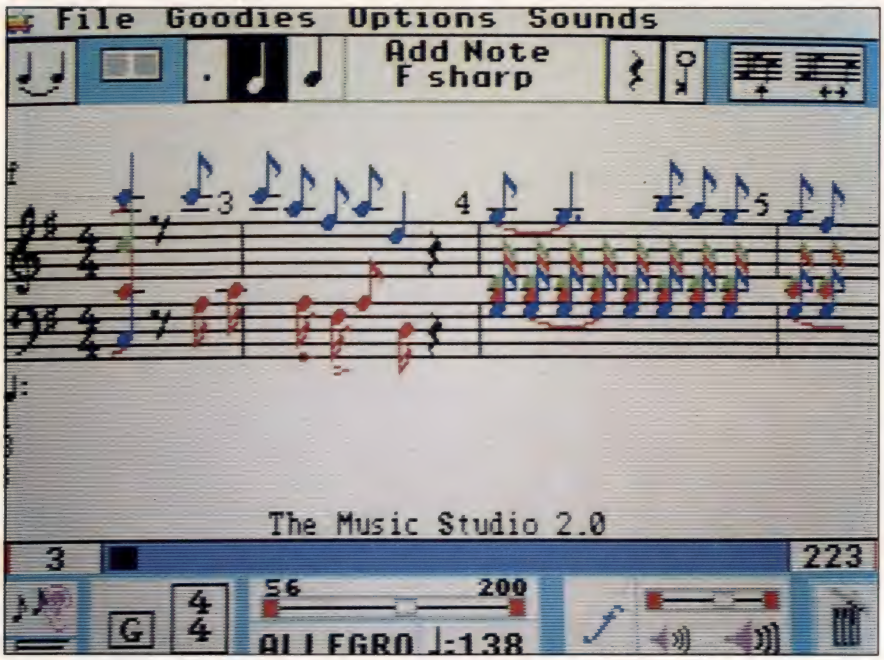
If the idea of getting a computer for the family intrigues you, then there's one subject you'd do well to study. The Apple IIGS.™

There are more Apple® IIs in more schools than any other personal computer. And the IIGS is at the head of the class. Which is not surprising. After all, it has enough power to run virtually all 10,000 Apple II programs. Up to three times faster than they've ever run before.

What's more, Apple IIGS graphics programs let you use over 4,000 colors with near photographic realism. And its music programs let you simulate anything from a human voice to a symphony orchestra.

*Anyone, that is, who's an artistic genius. But take heart, all the colors and all the notes are there. ©1987 Apple Computer, Inc. Apple and the Apple logo are registered trademarks



Complicated waveforms help generate quality musical sound in this update of Music Studio. The latest version supports 16 instruments, prints out music scores and provides a link to electronic musical instruments.

Digitizer Professional occupies its own slot in a IIGS. The software is configured for slot 6, the same slot as a 5.25-inch disk drive. If you do plug Digitizer Professional into slot 6, you won't be able to use your 5.25-inch drive when you want to use Digitizer Professional and vice versa.

The best thing to do is find an unused slot on your IIGS that's set aside for a function you don't need (e.g., slot 7 if you aren't using AppleTalk, slot 2 if you don't have a modem or MIDI port, slot 1 if you're using an AppleTalk printer and don't need the standard printer port, etc.). Plug the Digitizer Professional into that slot and activate the Digitizer's slot through the software menu. Once plugged in, Digitizer Professional is fairly easy to operate.

MDIdeas added a bonus for Digitizer Professional owners: a Digital Noise Reduction (DNR) circuit. (Actually, the term "Digital" here is redundant, because all sounds created by computers are digital. However, DNR is a standard audio term.)

The DNR circuit attaches between a Supersonic board and your speakers or amplifier. While the DNR circuit has nothing to do with the Digitizer Professional's recording capabilities, it produces a noticeable improvement for all stereo output from your IIGS — not just digitized sounds.

Besides cables for the DNR circuit, Digitizer Professional has an on-board mini stereo jack (Walkman-style) that is used for audio input. Our board came with an adapter cable that we connected to two phono jacks attached to our stereo's audio output. You can use any stereo adapter cable you wish to plug into the Digitizer Professional' mini stereo plug, however.

Using the Digitizer Professional to record sounds is simple. Just boot up the supplied software disk, specify the slot where the Digitizer Professional is located, adjust the sound level, start your audio source and begin recording. Once recorded, sounds can be edited for waveform, played back or saved to disk for use with another application.

Because the Digitizer Professional saves files in standard Apple format, a properly written program can use these sounds for special enhancements. Many games produced by PBI Software, MDIdeas' sister company for software products, have been enhanced with digitized sounds. To be candid, it sounds realistic when a computerized commander "barks" orders at you while you're in the middle of a game!

Currently, only one practical application is available for using sounds created with Digitizer Professional. That's SoundKeys, which comes on the Digitizer Professional's utility disk. SoundKeys lets you load a variety of sounds you've recorded and assign keys on your IIGS keyboard to these sounds. You can specify left or right speaker, or even different sounds for each speaker for the same key.

Once you've defined your keys, your IIGS keyboard becomes a sound-effects machine. One key can produce a telephone ring, a busy signal, a doorbell, a synthesized voice that says "come in," etc. Recorded sounds can be loaded into SoundKeys up to the memory limitations of your IIGS.

Unfortunately, you cannot use your newly created sounds from within other commercial programs. These details are being worked on by several companies. Soon you should be able to record a sound (a musical instrument, your voice, a rocket taking off, etc.) and convert it into a musical instrument for use within a music program.

That's where IIGS music stands today, which isn't to say it's standing still. New music writing programs are being produced by several small companies, including those listed in the back of this publication. Electronic Arts is supposed to release Deluxe Music Construction Set later this year, and new hardware and software utilities are being developed by a variety of sources.

With all of these new products though, why would anybody be interested in older products or new products that use yesterday's technology? Read on.

The Sounds Of Yesterday

With all the advanced features of an Apple IIGS and Ensoniq chip, why would anybody want to pay extra for five-year-old sound and music generating capabilities? The answer is software compatibility. While a IIGS can perform many tasks with software that used to require hardware, there are thousands of programs available that work on a IIGS only if it's equipped with a sound board designed for earlier Apples.

Note that, if you're interested in software originally intended for use on earlier Apples, the driver utilities for most boards are supplied on 5.25-inch disks. Generally, these boards support DOS 3.3 (an older Apple operating system before ProDOS), and most of the available applications are distributed on 5.25-inch disks.

In the Spring '87 issue we looked at the Phasor board from Applied Engineering, which combined speech, music and sound-effects capabilities. Here are two more sound generators.

Echo IIb

The Echo IIb, by Street Electronics, is an electronic voice synthesizer based on the Texas Instruments speech chip used in the "Speak and Spell" toy. (The toy was prominently featured in the film "E.T."). The Echo IIb board requires plenty of software to make it operational. All this software takes up about 9K of program space. Drivers are supplied for the ProDOS 8 and DOS 3.3 operating systems.

Don't expect a ProDOS 16 (a IIGS' main operating system) driver to be released soon. Remember, it's easier to produce sounds through software on a IIGS than it is to add an extra hardware board.

The Echo IIb is generally designed for users who want access to programs that already exist, not new programs. The patched copies of ProDOS 8 and DOS 3.3 supplied with the Echo IIb are relatively easy to use and required if you want to use the board. Most copy protected or stand-alone programs are not compatible with the Echo IIb. It's fairly easy to modify simple BASIC programs to use the Echo's speech capabilities, however.

What applications are suitable for the Echo IIb? Educational programs, especially for preschoolers, for demonstration purposes and applications for the handicapped, are the primary places where speech can be an asset.

Several years ago, we designed a custom Apple IIe system for a blind friend with a similar speech board. The computer would speak to her and respond to her voice. It could dial phone numbers, answer the phone, turn on and off a tape recorder, tell her the time and even unlock the front door.

Play it again, ma'm. Using a proprietary speech chip, the Echo IIb board can enhance computer usage for preschoolers as well as the handicapped.

Commercially available applications for the Echo IIb and handicapped users include modem programs for communicating with other computer users over phone lines, word processors, a text reader for Apple magazines available on disk, standard business programs and a variety of games.

RAMTalker Plus

RAMTalker Plus by Electronic Learning Systems is a board that combines several different functions. It includes 256K of battery-backed RAM, a real-time clock and a digital-to-analog converter. Depending on how it's addressed, the board can look like a disk drive, a clock or a printer interface.

The digital-to-analog converter is used by RAMTalker Plus as a speech synthesis circuit. Unlike Echo IIb, RAMTalker Plus doesn't use a chip designed specifically for speech generation. Rather, it uses a sophisticated software routine to generate sounds.

Software-generated speech isn't a new idea. The first speech program for the Apple was a digitized voice recorder written by Bob Bishop in 1978. Since then, software generators have come a long way from using an Apple's cassette input port as an audio input source.

Today's software generators produce speech nearly as good as, or in some cases better than, that produced by synthesized speech generators. TML Pascal (reviewed in the Winter '88 issue) has a Speech Toolkit available as an option that is actually a software speech generator.

Software-generated speech doesn't sound as realistic as digitized speech, but it is much more flexible. With digitized speech you can only play back what was previously spoken in and saved. Software generators, on the other hand, can pronounce any word in computer-generated text.

Software generators are not without drawbacks. Pronunciation continues to be a problem. English-to-text converters can not tell the difference between "polish" and "Polish" or "read" and "reed."

When you first configure RAMTalker Plus, you load the software driver routines into part of the device's memory. Once done, RAMTalker Plus "looks" like a printer interface to a IIGS. As a result, your "printout" will be produced as English speech through the speaker instead of printed text on paper.

This flexibility makes RAMTalker Plus compatible with thousands of programs never intended for speech. If your adventure game has a printer function that lets you print out your progress, tell the game to print to the RAMTalker Plus slot. You'll have your computer saying commands to you instead of printing them.

Besides speaking, RAMTalker Plus has other functions. If you're using RAMTalker Plus on an Apple II+ or IIe, you can use the real-time clock from ProDOS. (Remember, the Apple IIGS already has a built-in clock.) When you run the patch program on your ProDOS boot disks, ProDOS automatically reads in the correct time and date from the board. If you don't have a clock board, this extra function can save you the additional cost of a clock.

The extra RAMTalker Plus memory not used by the speech routines can be used as a pseudo disk drive. As with other RAM disks, RAMTalker Plus is lightning fast. Its RAM is also backed up by a battery, so it won't lose its memory when turned off.

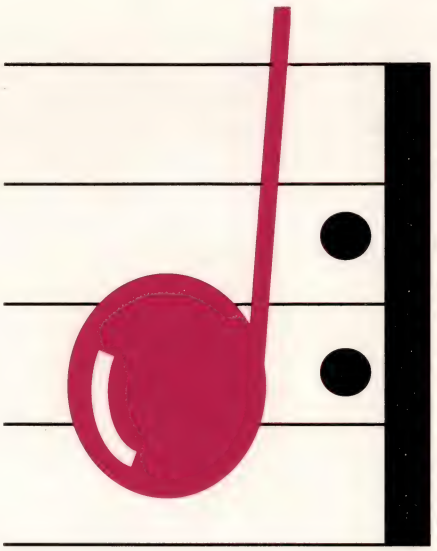
Again, RAMTalker Plus falls into the same "last generation hardware" category as Echo IIb. You can produce better quality speech on an Apple IIGS by using the same techniques and a program such as TML Pascal.

But TML Pascal will let you produce speech only if you know how to program in Pascal, and only from within a Pascal program. RAMTalker Plus lets you use existing programs and it works from any language.

Is it worth it to purchase yesterday's technology? In time, many of the programs that require additional hardware with earlier Apple IIs will be replaced by software that uses the Ensoniq sound chip, which is built into an Apple IIGS. The only questions are how long will it take and how much will it cost?

Purchasing a board originally designed for use with older programs may seem like a step backward. But when the software is available and working, that may be the right way to go. ■

— Philip Chien, contributing editor



More On MIDI

What is MIDI and what does it do? MIDI (Music Instrument Digital Interface) defines a standardized connector and communications protocol that allows different computerized sound generators to talk to each other.

Because everyone in the music world uses the same standard, MIDI allows for linking different brands of equipment together. It can also be used to connect a music synthesizer or keyboard to a computer equipped with a MIDI port and running the correct software.

Passport Designs has offered a MIDI board for the Apple II for quite some time. The unit, which sells quite well, plugs into an empty slot and includes the standard MIDI jacks.

For a long time, many considered MIDI and computerized music as a vertical market application confined to the educational and professional music fields. Last fall, however, Apple Computer, Inc. decided the market had grown enough to support a MIDI box for both the Macintosh and Apple IIGS. This Apple product plugs into the IIGS modem connector and includes standard MIDI input and output jacks.

The device's entire user manual is six pages long, including the Macintosh and Apple IIGS instructions and illustrations. At $99.95, expect Apple to sell many of these MIDI boxes.

There's an important feature to note before you purchase a MIDI port: By itself, a MIDI port is useless. Unless you have the proper software and a MIDI instrument, a MIDI box won't do anything.

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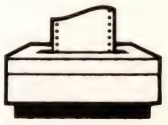

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Art For Non-Artists

An Apple IIGS can help transform anyone into a budding El Greco.

When we try to define artistic talent, most of us think of someone with the skills and eye/hand coordination of a painter, sculptor or illustrator. The designer is, unfortunately, relegated to a subservient role. Yet both kinds of artists are highly talented.

The line between an artist and non-artist is almost as thin. The difference has more to do with a lack of self-confidence or initiative than a lack of talent.

I have been teaching computer graphics to college-level advertising design students for more than five years. They currently use Apple IIGS computers to create business presentations, camera cards, forms, illustrations and color separations. The courses that I teach include desktop publishing, TV graphics, computer illustration and computer animation.

It is extremely rare to have a student who excels as both an illustrator and a designer. The computer acts as an equalizer. Those students who had been overshadowed by illustrators are now on an equal footing.

Call On Creativity

What usually stands in the way of creativity (artist and non-artist alike) is making that first mark on a piece of paper or canvas. A computer helps to remove that fear, because all images are soft images. We don't have to worry about failure or wasted materials. Changes made to an image that has been saved don't affect the original. This opens the way for experimentation and variety, two cornerstones of creativity.

Many people state that they can't even draw a straight line. With all the automatic tools available, we don't have to worry about drawing lines or other objects, including rectangles, circles or ovals, anymore. The truly innovative programs even offer automatic gradient fill and perspective.

With the kinds of tools that are featured within most graphics programs, the necessity of eye/hand coordination has been removed, as have most of the excuses that can keep many individuals from experiencing the enjoyment of creating art.

Software Choices

Choosing the correct software can make the difference between success or failure. If you feel hesitant, then select one of the specialty programs that can produce posters,

banners, greeting cards or awards. This kind of program makes most compositional choices for you and produces more predictable results.

If you feel more daring, the greatest freedom of expression is offered by drawing and painting programs. They do not restrict your creative choices.

Programs such as The Print Shop IIGS, Certificate Maker and Newsroom operate within carefully controlled and closed environments. They help organize the creative process. The artistic part of using such a program is one of selection rather than manipulation.

Closed environments depend heavily on collections of images called clip art. The subject matter of these images can cover a broad range — from business, holidays, birthdays, sports and awards to phrases, vehicles, borders and people. These images can be chosen and used directly or modified.

Constantly working in a closed environment can lead to frustration, especially as you begin to feel more confident and desire greater flexibility and creative freedom. The most creative license is provided by an open-ended environment. The results are less predictable but — when successful — infinitely more satisfying.

Of the open-ended environments available, paint programs will probably feel the most natural because most of them try to emulate traditional artists' tools. Even someone who can't use a real brush can understand the concept of a brush. The only eye/hand coordination needed is the same as that used to pull down and select menu items.

If you can use a mouse, you can paint electronic pictures with an Apple IIGS. When selecting a paint program, you should determine the kinds of features you will need. If you are new to graphics, it might be best to stick with programs that are not overly complex to reduce your frustration level.

File Compatibility And Clip Art

Three different file types are used today for super-high-resolution pictures on an Apple IIGS, and not all paint programs will recognize all three. One reason for the differences among the three file types is the method used to compress files on disk.

The easiest file type to understand is a binary file. This kind of file is an exact memory dump of the super-high-resolution page. Binary picture files are always the same length, because the image is recorded pixel by pixel and the number of pixels never varies.

The other two file types try to save space on disk by compressing the picture. Basically, the program examines each scan line of a picture to discover how many pixels appearing next to one another are of the same color. Both kinds of compressed formats record files that are of varying lengths. We will refer to the compressed file types as either paint or Apple preferred (the format Apple Computer, Inc. recommends).

Paintworks Plus 1.2 and Paintworks Gold offer the most versatility, because both can load and save all three file types. 816/Paint can load all three file types, but it only saves Apple-preferred and binary files. DeluxePaint II will load Apple-preferred and binary file types, but it can only save Apple-preferred files.

As powerful as it is, DeluxePaint II cannot load files created for Paintworks Plus or Paintworks Gold.

You should make sure that the clip art you purchase will be recognized by your particular paint program.

Paintworks Plus 1.2, Paintworks Gold and 816/Paint can all load files from the Art Parts disks created for DeluxePaint II, but DeluxePaint II cannot load any files created for Paintworks Plus or Paintworks Gold. Actually, there is a way to get these images into DeluxePaint II, but the method requires that you own both DeluxePaint II and either 816/Paint, Paintworks Plus 1.2 or Paintworks Gold.

First, load a file into any of these programs; then save the file in Apple-preferred format under a different name. DeluxePaint II will be able to load the file.

To use the Art Parts disks, a paint program should have a spare page that can be used to assemble a picture. A spare page is like a separate window. It is possible to work on two different pictures at the same time — one picture on a regular page — the other picture on the spare page. You just toggle between them; you don't constantly load and reload files.

Both DeluxePaint II and Paintworks Gold have spare pages, but Paintworks Plus and 816/Paint don't support this feature. Without a spare page, the procedure for using the Art Parts disks becomes time consuming and frustrating.

Another problem between file types has to do with the number of vertical pixels saved. Fortunately, the size of a screen is the same no matter the paint program.

The size of a program's page is another matter. A page is usually two screens, one on top of the other. This would make the page 320 by 400 pixels. But not all programs produce pages that are this size. Don't be surprised if the last few scan lines of a page are missing when you load a file that was created by a different program. If there is any crucial information in this area it would not be visible.

In The Paint Bucket

816/Paint from Baudville, Inc. is an excellent program that offers a great deal of power without being overwhelming. Not only does it offer most standard tools, such as straight lines, boxes, ovals, color fill, spray paint, text and zoom; it also has curved lines, French curves and color cycling. The program's spread feature for editing palettes is one of the best. You can spread between two colors on a single palette or spread between two colors on up to eight palettes.

The original Paintworks Plus from Activision, Inc. offers standard painting tools as well as cell animation that is more like the traditional way animation is produced. A separate picture is created for each frame of a sequence. The pictures are then rapidly flashed one right after the other to produce the illusion of motion. Cell animation requires more work than color cycling, but it offers greater variety and control.

If you want to really stretch the graphics capabilities of your IIGS, then try out a full-featured drawing program such as Electronic Arts' DeluxePaint II. Not only does it have all the standard tools, DeluxePaint II has an array of powerful new tools consisting of gradient fill, automatic perspective, locked background, locked foreground and stencil.

You can create a brush out of anything on screen. The brush mode is dynamic and includes smooth, blend, smear and cycle.

The advanced features in DeluxePaint II allow graphic novices to create images they might never have been able to create otherwise. For instance, users don't have to understand the rules of scientific perspective to use the program's automatic perspective feature. Nor must they have experience mixing paint to soften edges or blend colors.

Activision recently released Paintworks Gold, which compares favorably with DeluxePaint II. In fact, Paintworks Gold has many new advanced features, and it should be considered a completely different program from Paintworks Plus. This newest incarnation of Paintworks adds cycle animation, automatic perspective, user-selectable brushes, resize, bend, distort and gradient fill to all the tools and features of its predecessor.

Unfortunately, we didn't have any documentation to go along with the version we tested, so we couldn't quite figure out how to use a few of the new features, such as Slippy and Transparent colors. Even though we had problems with a few features, the interface used by Paintworks Gold follows Apple IIGS standards and is friendly and intuitive. You should expect to refer to a manual when using a program this powerful.

New Paintworks Gold features include cycle animation, automatic perspective and a bend facility. This latest version compares favorably with DeluxePaint II.

Clip Art

Once you have chosen a paint program, you will find there are shortcuts you can take to create images. For instance, clip art disks and video digitizers can help you achieve your creative visions.

Clip Art Gallery, produced for Paintworks Plus and Paintworks Gold, falls admirably into the category of traditional clip art. This disk contains more than 600 pieces of clip art organized into 24 categories. These images are intended to be printed in either color or black and white. The image styles vary from realistic to cartoonish.

Even though this collection is useful, it is related to the kinds of clip art used within a closed environment. The images are complete and decorative. There is little need to change them. At most, you might want to change the direction a figure is pointing or combine different pieces of clip art to create a new image.

Again, the creative process becomes one of selection rather than manipulation. Of course, the images can be combined in a wider variety of ways than specialty programs allow. It is possible to change the direction in which a clip art figure is pointing or to combine images to create new images.

Electronic Arts has produced non-traditional clip art that opens up creative vistas. The Art Parts disks within the Deluxe Library series make it possible to create realistic scenes that do more than decorate a page with border designs or individual images. The pictures on disk are deliberately unfinished. Users must add the creative spark that makes them complete.

Among the Arts Parts I images are background pictures. You can place a variety of animals or trees on these backgrounds to create your own complete pictures. This same disk includes a section that is best described as an "electronic Mr. Potato Head." Realistically rendered eyes, nose, mouth and ears can be placed on a blank face.

Assembling these images into composite art is fun. We applaud Electronic Arts for extending the boundaries of clip art.

Digitizers

Another kind of shortcut is to use a video digitizer or scanner. The ThunderScan by Thunderware is a scanning device that requires the help of an ImageWriter printer to capture an image.

VisionPlus and a camera captured this video image of the author's computer. Once in digital form, any image can be stored or used in a paint program.

Familiarity with how computers manipulate images is the sole requirement for being a digital designer. The image above was output on a LaserWriter printer.

There are also two different video digitizers on the market that require a video signal from either a camera or VCR. One of them is ComputerEyes GS by Digital Vision and the other is VisionPlus, a digitizing board from AST Research, Inc. Although the latter is no longer marketed, it is still available from AST in Irvine, California.

We use VisionPlus with an inexpensive color video camera. With this system, it's possible to capture any video image in color or black and white. The source for the video image can be a video camera, camcorder or VCR that generates an NTSC video signal, the video standard for most video equipment sold in the United States.

VisionPlus accepts an RCA plug. If your equipment uses a BNC or F-Type coaxial plug, you will need an adaptor.

The images themselves, which are saved as binary files, can be used in any of the paint programs mentioned in this article. It is possible to create your own collections of images, similar to those found on the Art Parts disks. Merely digitize your favorite pictures of landscapes, seascapes, people or animals; load them into a paint program; clean up the edges; and save them to disk. You can then retrieve them and create new combinations and compositions.

What is needed here is not so much artistic talent but a familiarity with how computers manipulate images and manage files. Most paint programs feature some form of magnification and it is extremely easy for anyone to blow up an image and retouch it.

It is also possible to digitize designs and clip art originally intended for print. Even live subjects and three-dimensional objects can be captured with a video camera.

The AST VisionEffects software that accompanies the VisionPlus board is easy to use. Merely focus on the object you want to capture, pull down the Mode menu and select Digitize. The mouse is used to adjust brightness and contrast, then click the mouse to freeze the image.

Although digitizing in color requires a few more steps, it only needs to be done once per session — unless lighting conditions are changed. After freezing an image, it is possible to tint the entire screen, change individual colors, change the palette, zoom in, zoom out and stretch the image.

Changing colors is a little tricky because the process involves moving and dragging the mouse in various combinations. Everything considered, the VisionPlus board produces excellent results.

Unfortunately, dot matrix printers are not capable of reproducing the vividness nor variety of color that is seen on screen. If you want to save your creations for posterity, we recommend taking photographs of the screen. The simple process requires the use of a tripod, because the exposure should be taken at a quarter of a second for optimum results.

Also, make sure your computer monitor is the only light source in the room to avoid reflections on the screen. Turn off all lights, focus on the screen, set the speed to one-quarter (1/4) second, set the aperture according to the corresponding light reading and shoot the picture.

LaserWriter Output

Connecting a LaserWriter to an Apple IIGS is easy. You merely connect the AppleTalk connectors to one another then plug them into each device. Make sure you get the appropriate connectors for a LaserWriter and an Apple IIGS, however.

Unfortunately, all of the features of the LaserWriter and LaserWriter Plus are not available to a IIGS. Many of the typefaces that are built into the LaserWriter will not print.

A LaserWriter is capable of producing printouts with a resolution of 300 dots per inch. The resolution of a super-high-resolution picture is either 320 by 200 dots or 640 by 200 dots for an entire screen. If you print a picture created with a paint program on a LaserWriter, you will get a black and white version of exactly what you see on the monitor. The laser printer reproduces the image pixel by pixel and does not improve on the screen resolution.

But all is not lost. StyleWare's Top Draw program can be used to electronically trace any super-high-resolution picture and to create a line drawing at the LaserWriter's maximum resolution, which is higher than the resolution of the screen.

Top Draw will accept clip art from disks created by Electronic Arts or Activision. Even digitized images are acceptable. The only problem we encountered with loading files had to do with full pages. The bottom half of a page from Activision's Clip Art Gallery is ignored by Top Draw.

To trace an image with Top Draw, you must first load the picture. Top Draw will treat the picture as if it were an object. Therefore, you can enlarge or reduce the picture from within the program.

We recommend you lock a picture to the page before you begin tracing. If you don't, it's easy to accidentally pick up the picture and move it out from underneath the tracing. Putting the picture back in place can be tedious. Locking the picture prevents it from being moved until you unlock it.

The next step is to choose the line widths and drawing tools that will best reproduce the original. A simple line drawing is the easiest to create, and it is also possible to reproduce values and textures.

Never Give Up

If you don't succeed the first few times you try to use your IIGS to create pictures, don't give up. Practice does help. Make sure you have a clear goal in mind before you start trying to create anything. Try making a few sketches on paper first. These sketches can be little more than doodles or scribbles. Their only purpose is to help you organize your thoughts before you begin to create.

Many manuals for paint programs contain exercises designed to improve your skill level. Don't bypass these exercises. Many of us pride ourselves on being able to use a program without even picking up the manual. If you are feeling frustrated, these exercises can help. They are designed to make you aware of features you might otherwise overlook.

The students in my classroom learn the most when they are forced to follow rigorous exercises that outline in detail what they are supposed to do.

If you need more help, community colleges in your area might offer courses in computer graphics. Be careful — many computer graphics courses teach programming, not the use of programs. Look toward the art department rather than the computer science department.

You don't have to be an artist to create pictures on a IIGS. The automatic features of paint programs and the shortcuts afforded by clip art and digitizers make it possible for anyone to create art, regardless of their skill level with traditional media. Pursue your interests. Take a chance. ■

— Gary J. Ramey

The author teaches art and design at the National Education Center in Phoenix, Arizona.

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Play

Looking at this season's crop of new software, you might think that "GS" stands for games and sports. The four titles we review here use the color graphics and digitized sound capabilities of the Apple IIGS to good advantage. All are conversions or adaptations of games originally developed for other computers.

Mean 18

Mean 18 is a simulation of golf, a sport Calvin Coolidge once defined as "a game in which one endeavors to control a ball with implements ill adapted for the purpose." For a programmer, golf is a matter of precision ballistics — calculating flight paths and figuring circular-error probabilities. For the player, golf is a leisurely game that emphasizes judgment and fine motor coordination, rather than feats of strength and endurance. These aspects can be simulated neatly with the mouse.

The heart of Mean 18 is its Power Gauge, a bar graph that models the force and timing of a golf swing. You click once to start your backswing, and an indicator rises on the gauge. A second click starts the downswing and sets a tick mark for your reference. The third and final mouse click "snaps your wrists" at the bottom of the swing. An early snap hooks the ball to the left, a late snap slices the ball to the right.

The game provides a rich array of options. Up to four players can take part and you can select stroke, match or team scoring. There are also beginner and experienced difficulty levels — beginners get perfect aim and their caddies make club-selection recommendations for each stroke.

Ball!

A look at four All-American ball games for the Apple IIGS.

Icons along the bottom of the screen allow you to select a golf club, view a map of each hole, look at the current scorecard and shift you aiming point left or right. When your ball finally reaches the putting green, the screen shifts to a magnified view and includes an indicator that lets you aim your putts more precisely.

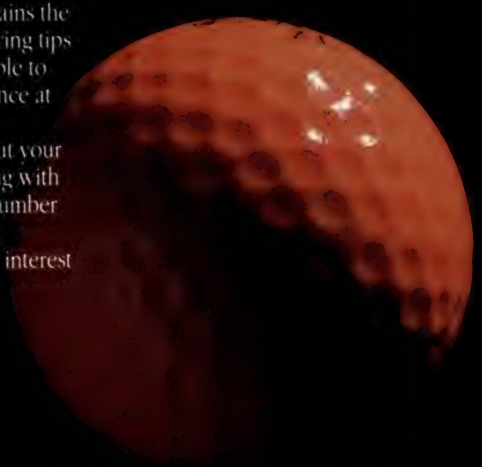
The program disk includes three famous golf courses: St. Andrews (Scotland), Pebble Beach (California) and Augusta National (Georgia). A Course Architect option lets you design and save your own golf course. Additional golf course volumes are sold separately.

Sound effects enhance the enjoyment of the game. The solid thwack of club against ball, the hushed murmur of the crowd when you miss a putt and the cheerful clatter when the ball drops into the cup are excellent features.

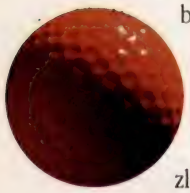
But Mean 18's graphics are quite blocky — a tree, for example, appears as a pattern of green and brown squares. In compensation, the screens are drawn and redrawn very fast, including a dramatic effect of opening curtains. The flight of the ball and its shadow on the fairway are realistically modeled.

An illustrated 10-page leaflet explains the game's many options and offers playing tips and pointers. Most players will be able to get started with only the briefest glance at the documentation. If you have an ImageWriter printer, you can print out your scorecard at the end of a game, along with such statistics as longest drive and number of drives that landed in the fairways.

Any IIGS owner with the slightest interest in golf should enjoy Mean 18.



World Tour Golf



Electronic Arts likes to describe its games as "fast, hot and deep." Fast, because a beginner can learn a game quickly. Hot, because the games intensely involve a player's eyes, ears and hands. Deep, because the games offer challenging puzzles and unfolding layers of complexity.

On all three counts, World Tour Golf scores points. The game is significantly more challenging than Mean 18. On equivalent courses, we averaged three or four strokes more on every hole.

Graphically, World Tour Golf is a more ambitious production. The screen is split between an overhead view of the current hole and a player's view down the fairway. Strokes are controlled by mouse clicks on a small, pop-up circular gauge. This method was not as easy to use as the bar graph in Mean 18, by the way.

World Tour Golf draws a landscape as a series of colored polygons. Trees and other features are pulled in from a library of shapes. The overall effect is handsome, but each screen takes a few seconds to draw. Because the screen is redrawn for every shot and whenever you change your point of aim, the delays mount up.

Unlike Mean 18, World Tour Golf requires players to consider wind effects. An indicator shows the wind speed and direction for every shot, which fluctuates during a round.

When you reach the green, World Tour Golf handles the aiming of your putts less precisely (and less conveniently) than Mean 18. Because of the split-screen effect, the graphic representation of the green is too small and too crowded. You aim your putts by moving an aim point via the mouse. This method is less intuitive than the linear pointer in Mean 18.

The program's documentation includes a detailed 12-page manual and a quick reference card. You'll need the manual right away, because the program displays a small overhead view of a golf course after the opening screen and insists you identify it. Unless you type in the name of the course (by referring to illustrations in the manual), you cannot play.

Publishers using this irritating method to discourage piracy should consider dropping copy protection by way of compensation.

In a remarkable feat of data compression, Electronic Arts has packed 24 different golf courses on the program disk. Six of these are fictional, but the real ones include Augusta National (Georgia); Champions (Houston); Cypress Point (California); Hirono (Japan); Incline (Nevada); Indian Valley (California); Kiahuna (Hawaii); Montreal (Canada); National (New York); Oakmont (Pennsylvania); Olympic (San Francisco); Pebble Beach (California); Princeville (Hawaii); Seminole (Florida); Shinnecock (New York); St. Andrews (Scotland); St. Georges (England); and Winged Foot (New York).

A complete graphic tool kit for constructing your own golf course is also provided.

As with many Electronic Arts titles, World Tour Golf reflects a sense of humor. Messages such as "Blast!," "Aargh!" and "Why ME?" appear frequently in balloons above the animated player figure. While serious golfers are likely to prefer Mean 18, World Tour Golf is a good entertainment value. Where else can you bash your way through 18 holes in less than an hour?

How They Score

Title	Mean 18	World Tour Golf	Hardball!	GBA Basketball
Publisher	Accolade	Electronic Arts	Accolade	Gamestar
List price	$44.95	$39.95	$44.95	$44.95
Memory	512K	512K	512K	512K
Interface	mouse	mouse, keyboard	mouse, keyboard joystick	keyboard joystick
Player options	1 to 4 players	1 to 4 players	1 or 2	1 or 2
Save game?	yes	no	no	no
Operating system	P16 (v.1.2)	P16	DOS 3.3	P8 (v.1.1.1)
Copy protected?	yes	yes	yes	yes
Toggle sound?	no	no	no	yes
Practice?	yes	yes	no	yes
Ratings				
Graphics	good	excellent	very good	very good
Sound & music	excellent	excellent	excellent	excellent
Ease of learning	easy	easy	hard	easy
Difficulty	moderate	challenging	challenging	challenging
Staying power	good	very good	good	good
Documentation	good	very good	poor	good
Overall	excellent	excellent	fair	good

Hardball!

It's difficult to grow up in America without learning at least the rudiments of baseball, but that doesn't mean we have to like the game. Baseball simulations tend to be even more boring than the game itself. And, if you play at home on a computer, you can usually get better-quality hot dogs.

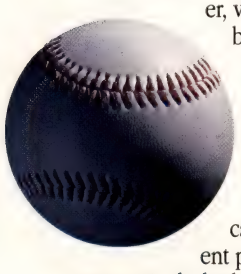
Hardball!, designed by Bob Whitehead and adapted for the IIGS by Dan Thompson, is a difficult arcade/action game with realistic strategy elements.

The designer of a baseball simulation has an almost impossible task. He has to model several radically different variables simultaneously: the athletic performances of throwing, running, batting and catching; the immediate tactical decisions of pitchers, hitters and base runners; and the strategic planning by coaches and managers.

Because baseball is a sport obsessed with the collection and worship of statistics, a designer can simply program historical teams and let them slug it out probabilistically. But this doesn't leave much for a user to do, except press a joystick button occasionally.

Hardball! takes a different approach. The teams in the game are fictional, but the play options are authentic. One such option is using a designated hitter (someone who bats in place of the pitcher). The computer can play either side, or two players can compete by using various combinations of the keyboard, joystick and mouse.

A game begins with a manager's decision screen, which displays the lineup for each team. A manager can substitute players, exchange positions, shift the outfield and issue other orders. Play begins with the pitcher's screen, an impressive animation of the pitcher, batter, umpire and catcher, viewed from a point behind and to the right of the pitcher. The simulation is very much a pitcher's game, with eight types of pitches altogether.



An individual pitcher can throw only four different pitches. The batter's options include deciding when and where to swing at a pitch, bunting and stealing bases. When the ball is hit, the display changes to an animated view of the outfield (left or right).

As the runner goes tearing around the bases, you must use the mouse or joystick to move a receiving fielder (whose symbol is blinking) to catch or pick up the ball. Once the fielder has the ball, you must tell him where to throw it. Be careful, things happen fast.

The umpire's digitized voice announces every strike. The other sound effects are equally sharp, and you can adjust the volume by repeatedly pressing the "+" and "-" keys on the numeric keypad.

A nine-page leaflet describes all options and functions, but doesn't provide many hints or tips on how to play the game. It assumes a player already knows a good deal about baseball.

We found it extraordinarily difficult to hit the ball and quite difficult to catch it. The computer, when controlling the opposing team, finds it quite easy. Therefore, playing against the computer is rather frustrating. You can expect to be slaughtered.

Overall, Hardball! earns high marks for its sound and graphics, but low marks for fun. We feel the game was programmed for the more powerful 68000 microprocessor and for computers, such as the Amiga and Atari ST, that have hardware support for sprites (animated graphics).

The IIGS conversion doesn't make enough allowances for the limitations of the system. A truly dedicated baseball fan might feel differently, though.

GBA Championship Basketball

To simulate the full kinetic frenzy of a basketball game you would need the power of a Cray super-computer, a legion of programmers and a budget of Pentagon proportions. But by confining the scope of the game to GBA Championship Basketball: Two-on-Two, everything fits neatly into an Apple IIGS. GBA, by the way, stands for the "Gamestar Basketball Association."

The program is carefully designed and well organized, so you are never overwhelmed with too many options. An initial Chalkboard screen lets you select Demo, Game or Practice modes.

In Demo mode, the computer controls all four players. In Practice mode, you can have two human-controlled players or one player on the court by himself. There is a wide range of player options in the Game mode. You and a computer-controlled teammate can take on a computer team, or two users can team up and play against the computer.

The animated figures on the court are drawn from a roster of 10 players, loosely based on real-life basketball stars. Although the figures are quite small, the quality of the animation is superb. All players are numerically rated for shooting accuracy (inside and outside the key), dribbling, stealing, quickness and jumping ability. Within limits, you can change these values to emphasize certain styles of play. You can even change the skin color of your players (black or white).

You use the joystick or keyboard to control moving, passing and shooting. A quick tap on the joystick button (or Option key) initiates a pass or requests one from your teammate. To attempt a shot, you press and hold the mouse button. Your player/figure begins the shot by jumping and releases the ball when you release the button. Under the right conditions, hook shoots, slam dunks, tip-ins and rebounds are all possible.

Only half the court is actually shown on screen at a time. The display flip-flops when the ball handler crosses the center line. This causes some confusion and disorientation until you get used to it.

The game keeps track of the rather intricate rules of basketball — for example, it manages the clock and calls fouls. The clock runs in real time, and a complete game takes four six-minute quarters.

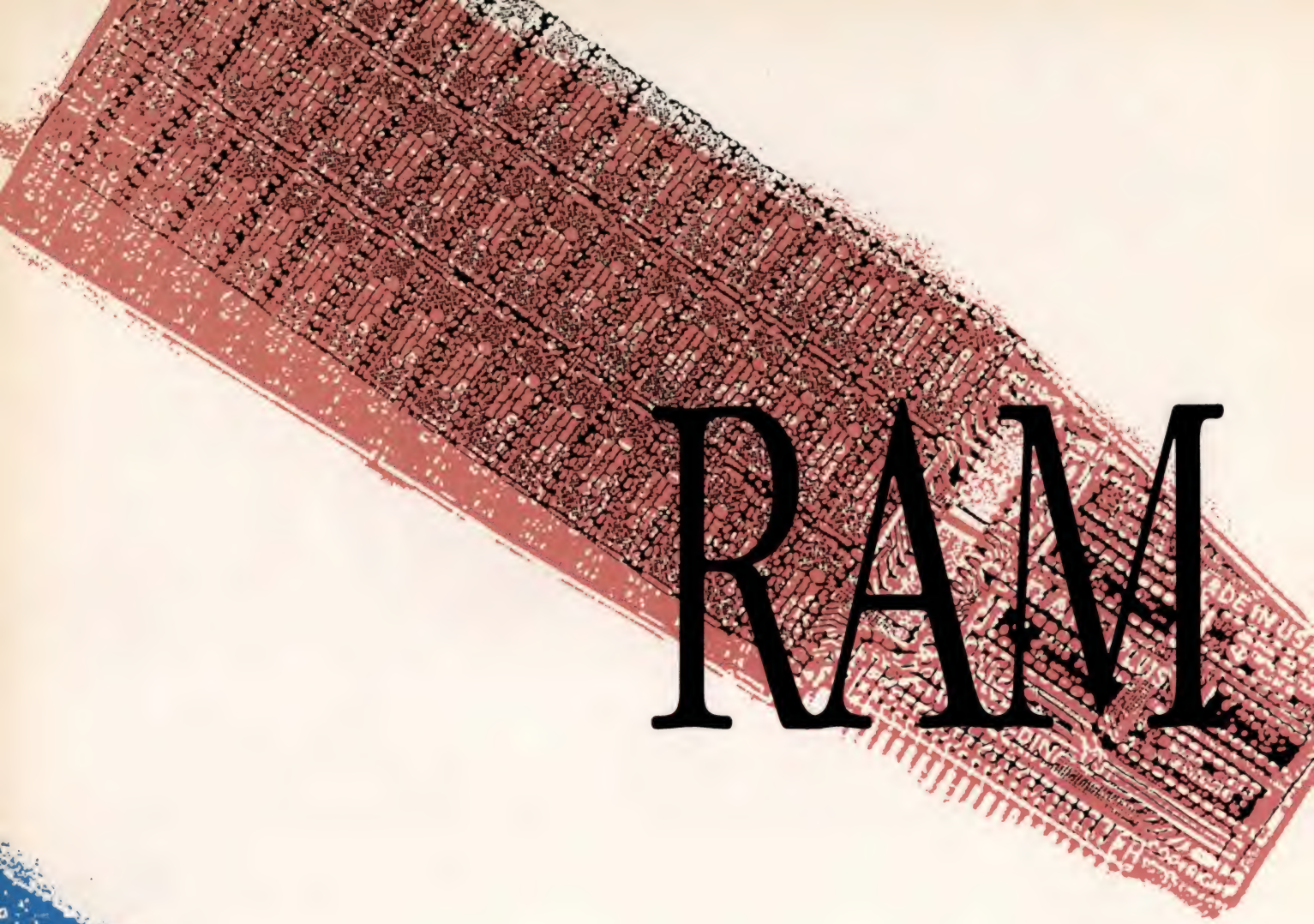
When there is a change of possession (of the ball), you have the option to call a play by choosing an offensive and defensive alignment. This tells your computer teammate what to do. The play-calling screen replaces the scoreboard for a few seconds while the players run down the court.

Two-On-Two requires a IIGS with the "revised" ROM chip (version 01). This requirement is clearly marked on the outside of the package. You need a color monitor and at least 512K of RAM.

A 30-page illustrated manual provides clear, detailed explanations that assume no previous knowledge of the game. We appreciated that. Although we never liked basketball much, we like this game a lot. ■

— Mike Markowitz

RAM



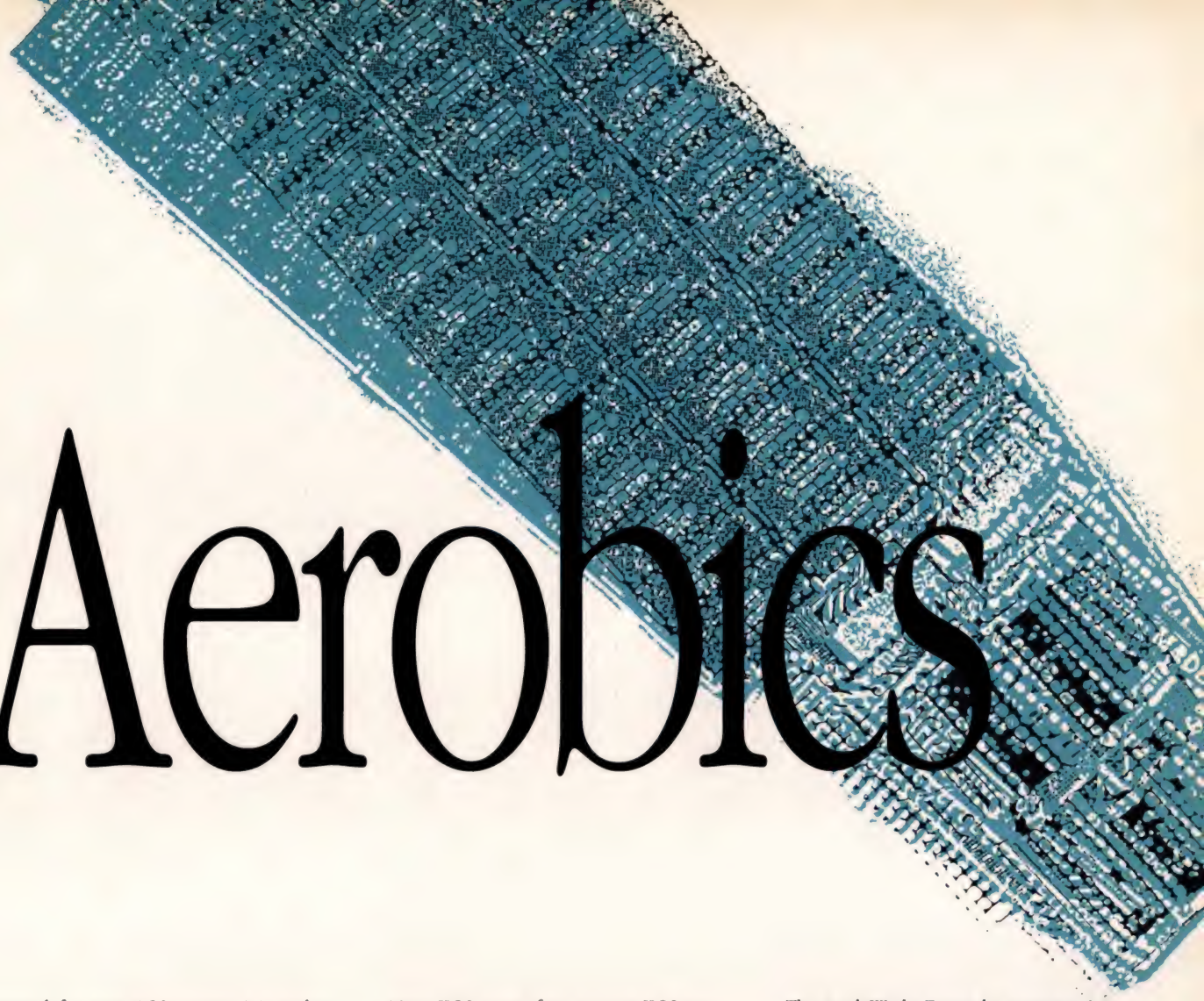
Not getting the most out of memory? Try these exercises to keep your RAM board healthy and strong.

Remember your first Apple II+ and how its whopping 48K of memory made you feel like king of the block? Friends and relatives would come by just to ogle over your "super-computer." How times have changed.

The Apple IIGS comes equipped with a full 256K of memory. It's a rather short-lived elation, however, when you realize that much IIGS software requires 512K or more memory to operate.

How Much Is Enough?

Although there is no definitive rule on how much IIGS RAM to purchase, there are several important considerations. First, because the price of RAM continues to decrease, it is generally a good idea to purchase only the RAM you need today. Buy additional RAM later, when the need arises and prices are lower.



Aerobics

Second, for most IIGS owners, it is probably best to purchase a RAM board that allows the greatest expandability. The Apple RAM board, for example, can contain up to 1 MB of memory, whereas the Applied Engineering GS-RAM board can contain up to 1.5 MB; the GS-RAM Plus board can contain up to 6 MB of RAM.

Although 1 MB may seem like an infinity now (just as 48K did on the II+ and 128K eventually did on the IIe), recognize that new software is requiring larger amounts of RAM every day.

Third, all major manufacturers of IIGS RAM boards provide information on which RAM chips are needed and directions on how to install RAM chips. Adding memory yourself is a simple task, generally taking only a few minutes.

IIGS RAM boards allow users to run memory-intensive programs such as Multiscribe GS or Paintworks Plus. These applications automatically seek and use expansion RAM with no user intervention. Unlike users of earlier Apple II computers, IIGS users have only to "boot and run" software to take advantage of all the memory.

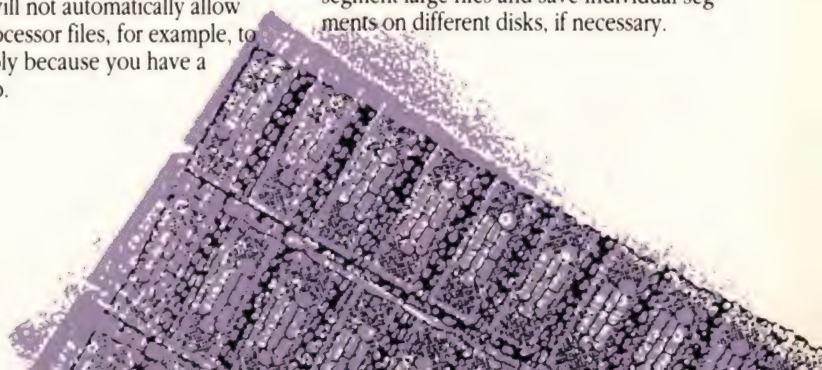
Many IIGS users often run non-IIGS-specific applications, such as AppleWorks, Point-To-Point and other ProDOS 8 software, that work well within the confines of a IIGS' 256K memory. While some software, such as the latest versions of AppleWorks, will automatically take advantage of additional memory residing in the Memory Expansion Slot, most ProDOS 8 applications do not. Still, this does *not* mean all the memory must sit idly by.

Expanding AppleWorks

AppleWorks 2.0 will automatically use expansion RAM in a IIGS for expanding the size of the Desktop. As favorable as that is, you are still limited in the size of your AppleWorks files and the Clipboard — AppleWorks will not automatically allow your word processor files, for example, to be larger simply because you have a larger Desktop.

The AppleWorks Expander program, provided by Applied Engineering along with its GS-RAM and GS-RAM Plus boards, allows you to expand and enhance various features of AppleWorks. For example, the AppleWorks Expander increases the Clipboard's maximum number of lines allowed from 250 to 2,042 lines. This increase saves time and hassle when you need to move large chunks of information between files.

The AppleWorks Expander also increases the maximum number of lines allowed in word processor and database files from 7,250 and 6,350 lines, respectively, to more than 22,600 lines in each. Because the size of individual files can now be larger than may fit on a single disk, the AppleWorks Expander alters AppleWorks and allows it to segment large files and save individual segments on different disks, if necessary.



Expansion of the Apple IIGS printer buffer from the 2K "standard" to as much as 64K is another feature. If you've ever had to wait for a large file to print before you could use your machine again, you'll really appreciate the enhanced printer buffer.

Disk Caching

The popularity of disk cache systems has skyrocketed since the release of the IIGS, thanks to the computer's ability to use large amounts of RAM. When your application needs information that's stored on disk, it accesses the information a block at a time. This can be slow. Each block is read in to the application individually, and the drive must search for the block requested.

Disk cache systems read in an entire track's worth of blocks at once, under the assumption that other blocks on the track will be required shortly. The entire track is stored in a RAM buffer. When other blocks from that track are required, they are available in lightning speed from the RAM buffer. The slow process of searching for and loading from disk is bypassed.

For applications performing extensive disk read activities, disk caching can dramatically improve speed and performance.

Several IIGS disk cache systems are available. Diversified Research Systems markets Diversi-Cache, and Applied Engineering supplies GS-RAM Cache with the purchase of its GS-RAM and GS-RAM Plus boards. Both function well and are easy to install.

Once a caching system is installed, its presence becomes invisible to an application and its user - save for the increased speed of the application.

RAM Disk Drives

Although disk caching may greatly increase an application's speed, the process still relies on mechanical disk drives for operation. If you need more speed than cache systems provide, consider using your high-capacity RAM board as a RAM disk.

A RAM disk is RAM memory used as a "disk drive" for storing files. Where a real disk drive is a mechanical device that's relatively slow in operation, a RAM disk is a solid-state electronic device with no moving parts. As such, RAM disk operations — reading and writing files — are much faster than real disk operations.

Users of ProDOS 8 may already be familiar with a RAM disk device called /RAM. On 128K Apple IIe and IIc systems, ProDOS 8 automatically provides a 64K /RAM device when the 64K is not being used by an application. This device functions like a real disk drive - you can save files to it, read files from it, CATALOG it, etc.

The only significant drawback is that this memory is volatile. When the power goes off to your computer, the contents of /RAM are lost forever. Thus, most users copy the contents of /RAM to an actual disk to permanently save their files.

On an Apple IIGS, the 64K /RAM is still available under ProDOS 8. Users may also have an additional RAM disk device called /RAM5, whose size may be as large as the total memory on the RAM board.

When you enter the Apple IIGS Desktop and select the Control Panel, the last listed option is RAM Disk. If you have a 1 MB board installed, your default settings should be minimum RAM disk size: 0K; maximum RAM disk size: 1,024K. The maximum RAM disk size value indicates how large a RAM disk you may use.

Because the /RAM5 disk functions exactly like a real disk drive, only faster, it is ideal for disk-intensive applications. Simply copy the files you'll be working with from a real disk to /RAM5 before starting your application, then copy the files back to the real disk when you're done. Utilities such as Prosel (see sidebar) or Quality Computer's RAMUp can greatly aid in the uploading and downloading of RAM disk contents.

The /RAM5 device comes in handy for making copies of disks when you only have one real disk drive. For example, on our work system we only have one Apple 3.5-inch drive. When we wish to make backup copies of 3.5-inch disks, we copy the real disk (original) in its entirety to the /RAM5 volume using the Prosel Volume Copy utility. Once the entire disk is copied to the /RAM5 drive, it may be copied back to the real disk as many times as we desire without having to copy it back to the RAM disk each time.

The Power Of Prosel

Prosel has been and remains one of the best utilities for the Apple II family. Written and marketed by Glen Bredon, Prosel is a PROgram SELector Desktop environment that contains some of the best utilities available for working with files and volumes, including RAM disk volumes.

The Prosel Desktop is a text-oriented Desktop environment, as opposed to a graphics-oriented Desktop environment such as the Finder. It allows up to 48 different applications on the Desktop, from which you may either use the arrow keys or mouse to select and run the application of your choice.

Several Prosel utilities enhance the use of RAM disks. CAT.DOCTOR, for example, allows you to examine CATALOGs; copy, delete or move files; and create subdirectories ("folders" in the Finder environment) quickly and easily. Subdirectories are displayed in hierarchical arrangements, illustrating their relationship to other subdirectories. CAT.DOCTOR's file copying is fast and error-proof and, for us, more natural than that of the Finder.

Prosel offers an additional utility, called RAM.DRV, that automatically RESTOREs the contents of a RAM disk. Simply create a disk file containing a copy of your RAM volume's contents before switching your IIGS off. The next time you boot Prosel, the contents of this "backup" file (containing the RAM disk's files) are automatically restored to the RAM disk without further operator intervention.

The Prosel BEACH.COMBER utility reorganizes data blocks so they are arranged in consecutive disk blocks, thus speeding up the operation of reading files from the disk. Using BEACH.COMBER is an easy task. You simply tell it which drive you wish to work on, and BEACH.COMBER does the rest without further intervention from you.

This is a slow process on real disk drives, taking eight to 10 minutes for a single 3.5-inch disk. To speed things up, we use Prosel's fast volume COPY to first copy our 3.5-inch disk contents to a RAM disk (which takes about a minute), let BEACH.COMBER do its magic on the copy of the real disk in the RAM disk (in about 30 seconds), and then copy the organized volume from the RAM disk back to the real disk (another minute or so).

Prosel may be ordered directly from the author for $40 by sending payment to: Glen Bredon, 521 State Rd., Princeton NJ 08540.

This method saves a *lot* of disk swapping. Also, because read/write activities are extremely fast on the RAM disk, the actual copy procedure is much faster when one of the devices is a RAM disk.

In addition, the /RAM5 volume is useful for telecommunications. Before calling a long-distance bulletin board service (BBS) or an on-line database service, we compose all our messages off-line and save them as disk files on /RAM5. When we log onto the service, we can quickly upload files from the /RAM5 disk without the delays associated with real disk drives.

An even handier feature we use to save money is downloading messages en masse for reading off-line. We use Pinpoint Publishing's Point-To-Point communications program, which features an 18.5K capture buffer. When we log onto a service, we turn the capture buffer on and anything that comes across the screen, from either the host or what we type at our keyboard, is captured to a RAM buffer.

When the capture buffer is full, Point-To-Point sends a stop character to the host. Then it automatically saves the buffer to a /RAM5 disk file, clears the buffer and sends a start character to the host to resume sending text while Point-To-Point continues to capture.

This process takes less than two seconds when using a /RAM5 volume, but much longer when saving to a real disk. The process is repeated each time the buffer fills, with subsequent text being appended to the /RAM5 file each time the buffer is full. When done, we log off the system and read the saved text file at our leisure. The connect-time savings are considerable.

We have found The Desktop Manager's Disk Manager application to be an invaluable aid in backing up RAM disks.

Rather than having to exit an application, you simply back up the contents of your RAM disk on a real disk and rerun the application. You can also call up Disk Manager, use it to copy your RAM disk to a real disk, then return to your application precisely where you left off - all in a matter of seconds.

ROM Disk Drives

There is one way around the problem of volatility in RAM disks — converting your RAM disk to a ROM disk.

A ROM disk on a IIGS refers not to Read-Only Memory, but rather to a RAM disk that maintains its contents when the power is off. Three products are currently available that provide a ROM disk — MemorySaver GS by Checkmate Technologies, RamKeeper by Applied Engineering and OctoRam with ESP by MDIdeas.

MemorySaver GS fits into the RAM Expansion Slot in an Apple IIGS. Most existing RAM boards then plug into MemorySaver. Power is supplied to the combination of boards via both a wall transformer unit and a battery pack containing six NiCad rechargeable batteries. Power is maintained to the RAM via the wall transformer unit; if the power is interrupted, the battery pack instantly takes over supplying current to the RAM board. The wall transformer also supplies a trickle charge to the batteries to keep them fresh.

Usually, a IIGS "sees" whatever total RAM is available in the Memory Expansion Slot, and that total memory is available for applications and RAM disk use. MemorySaver allows you to partition the total expansion memory into a ROM disk drive (with a default name of /ROM) and non-ROM memory. The /ROM disk portion serves as a non-volatile RAM disk whose contents are maintained by MemorySaver when the IIGS is off.

The non-ROM disk portion is what a IIGS' Control Panel sees as total expansion memory for application and/or RAM disk use. This portion's contents are *not* maintained when a IIGS' power is off.

The use of a ROM disk can greatly increase the speed of booting your system. Many IIGS owners copy the contents of their bootup Finder Desktop disks (/SYSTEM.DISK version 3.1) to their ROM disks and change their Control Panel slot settings. This allows the computer to boot from the ROM disk volumes when powered up. As a result, the Finder Desktop can be up and running in as little as eight to 10 seconds; AppleWorks can be operational even faster.

On our BBS, we have a GS-RAM and MemorySaver with 1.5 MB partitioned as a ROM disk. It contains the entire system software — all bulletins and electronic mail and several on-line databases. As callers move between areas of the BBS, system programs are swapped with lightening speed and with no noticeable caller delays.

The ESP board by MDIdeas provides a different approach to a ROM disk. First, the ESP board is limited to 512K RAM; you cannot expand your /ROM disk size beyond 512K. For most /ROM applications, 512K is sufficiently large, allowing you to easily move the /SYSTEM.DISK 3.1 to /ROM to boot into the Finder Desktop. Second, the ESP board is a piggyback and requires the OctoRam board by MDIdeas.

ESP maintains the contents of RAM on the /ROM volume via gel power cells; no wall transformer is used, nor are NiCad batteries, as in MemorySaver. NiCad batteries require periodic draining and recharging to function properly, whereas gel power cells simply require you to run your IIGS for a minimum of eight hours per month to maintain a charge.

We've found the ESP/OctoRam combination works flawlessly. The MemorySaver/GS-RAM combination, as of this writing, seems to have problems. The first MemorySaver GS board we received simply would not maintain its /ROM contents when the IIGS was turned off for as little as a minute. We returned that board for an upgrade, but problems continue to plague this combination.

(Editor's Note: For information on the RamKeeper board from Applied Engineering, see the separate review in this issue.)

An outstanding IIGS feature is the ability to have several programs loaded into memory simultaneously. Although only one application may be active at any given time, you may temporarily suspend an active program and quickly activate an inactive one.

Classic Desktop Accessories (DAs), such as Diversi-Key and The Desktop Manager, remain in the background while you actively work in another application, perhaps AppleWorks. When you need to perform a task with one of the background applications, you simply suspend AppleWorks and activate the background application of your choice. When done, you return back to AppleWorks at precisely the point you left.

No Longer A Luxury

Extra RAM is no longer an option to IIGS owners. The Finder requires a minimum of 512K; paint programs — such as Paintworks Plus, Top Draw and 816/Paint — require at least 756K; and programming languages — such as APW C — require 1 MB or more of RAM to operate.

Yet expansion RAM offers far more utility than simply allowing you to run commercial software with large RAM requirements. For IIGS owners, extra RAM is a must. Knowing how to maximize its use can greatly increase personal productivity, make system activities easier and more enjoyable, and provide you with top value for your dollar. ■

— Ken Buchholz

ImageWriter LQ

Improving A Classic

Performance: 7
Documentation/Support: 6
Ease Of Use: 8
Value: 8
Overall: 7.25

With all of the interest and popularity of laser printers, is it surprising that Apple has introduced a new dot matrix printer? Actually, no. The ImageWriter LQ, the latest in a series of printers that dates back to the 1983 Apple Dot Matrix Printer, is an excellent complement to Apple's printer line, along with the ImageWriter II (reviewed here in the Winter '87 issue) and the new family of LaserWriters.

As the name implies, the ImageWriter LQ is an ImageWriter with a letter-quality mode. A wide-carriage printer, it includes an expansion connector for AppleTalk or an expanded buffer, uses the sub-8 RS-422/432 interface and supports multicolor ribbons. It also produces some of the best quality text we've seen on any dot matrix printer, thanks to its unique 27-wire printhead.

Many other popular NLQ (Near Letter Quality) printers have been available for quite some time (Toshiba P1351, Epson LQ-1500, NEC P5XL, etc.). These printers use printheads with only 24 wires, however. Is 27 wires just a sales gimmick or is it a real improvement?

By itself, 27 wires doesn't deliver much more quality than a 24-wire printer. However, software compatibility is the important issue here. A 27-wire printhead has exactly three times as many wires as a nine-wire printhead. Because nine doesn't divide evenly into 24, the ImageWriter LQ supports software designed for nine-wire printers much better than 24-wire printers can.

If you attempt to use a graphics program configured for a nine-wire printhead on a 24-wire printer, the output will be stretched — even though the printer is supposed to be compatible with earlier nine-wire models. While this won't make a difference for many programs (e.g., text, graphs, logos, etc.), it's a disaster for full-page graphics programs such as The Print Shop IIGS.

Your calendars, signs, cards and other printouts will all stretch to 12 inches on an 11-inch page. In addition, programs with important aspect ratios (e.g., portraits, maps, etc.) will appear stretched.

Driven by a 27-wire printhead, the ImageWriter LQ is more closely compatible with earlier software than 24-wire printers.

Because an ImageWriter LQ's 27-wire printhead is an exact multiple of a nine-wire printhead, programs designed to work with the nine-wire ImageWriter will work properly with the ImageWriter LQ.

In time, we'll see programs designed specifically for use with the ImageWriter LQ and others enhanced to tap its capabilities. Conveniently, the ImageWriter LQ's typical resolution is 216 dots per inch (dpi), three times the 72 dpi of a standard ImageWriter.

With the proper software, an ImageWriter LQ can go up to 320 by 216 dpi. It's possible to produce extremely high-quality text by choosing a font three times the size of your screen font and shrinking it by a factor of three in the printout.

Right now, a driver that does this is available for the Macintosh. It produces excellent quality text. Unfortunately, no equivalent driver is available for the IIGS — yet. One may be available by midsummer.

When that driver becomes available, you'll see a remarkable improvement, even with current software. Any program that produces Macintosh-style text (e.g., Multiscribe GS, GraphicWriter, etc.) can use the font-shrinking system.

Bit-oriented graphics programs, such as Paintworks Plus or DeluxePaint II, are oriented toward medium resolution 72 dpi output and won't show much improvement on an ImageWriter LQ. With the proper smoothing software, however, you can create better circles, and reducing the output on a page increases the apparent resolution.

Object-oriented graphics programs, such as Draw Plus and Top Draw, will be able to automatically use the 216 dpi mode of an ImageWriter LQ properly and produce excellent quality output.

In any case, an ImageWriter LQ will produce output as good as other ImageWriters, and the proper commands can be sent through standard ASCII programs (e.g., AppleWorks) to produce excellent-quality text. The printer's front panel lets you select between Draft, Near Letter Quality (NLQ) and Letter Quality (LQ) modes.

The LQ mode is only available in proportional spacing. It prints at 115 characters per second (cps) and produces text quality almost as good as a LaserWriter, daisy wheel printer or typewriter. The NLQ mode prints at 90 cps and is quite adequate for day-to-day work and even business documents. The Draft mode prints at up to 250 cps and is quite adequate for listings, spreadsheets and program output.

The manual recommends that Apple II owners reset the baud rate of the printer to 9,600 for compatibility with earlier ImageWriters. Yet we found it much easier to reset the IIGS' Control Panel for 19,200 baud (the standard out-of-the-box speed for the ImageWriter LQ). We reset the speed for interface cards on an Apple IIe's — or the IIc's — System Utilities to 19,200 baud as well.

The ImageWriter LQ includes a versatile paper feed system with three separate tractor paths, plus a friction feed option for single sheets. The tractors can be set to pull the paper from the back, pull the paper from

the bottom of the printer or push the paper through from the back. In addition, an envelope feeder and a cut sheet feeder are available with up to three separate paper bins.

The three bins can be controlled separately by software. For example, you can have a program print an address on an envelope, print the first sheet of your document on your stationery, print second sheets (without your company logo) from another bin and dump a gift certificate from the last bin.

While the traditional Pull Tractor mode is best for most applications, and a must for special multipart forms or mailing labels, the Push Tractor mode has its advantages. With the Push Tractor mode, you can remove a page immediately without wasting any paper. The next sheet can be printed on directly, as close as 1/16th of an inch from the top of a page.

The included manual persistently warns you not to print over perforations, on an empty platen or over the border of a page. While these are good recommendations, apparently Apple is encouraging users to follow good habits because of the cost and fragility of the 27-wire printhead.

Like earlier ImageWriters, the ImageWriter LQ includes built-in foreign character sets and is an intelligent printer. A properly written program can "ask" the printer about its model, paper feed setup and number of sheet feeder bins installed.

Although most software designed for earlier ImageWriters is compatible with the ImageWriter LQ, many hardware accessories may not be. For example, the ImageWriter LQ uses a new ribbon cartridge for its higher-density printhead, and anything that requires the old printhead/ribbon mechanism (e.g., Thunderscan, T-shirt ribbons, etc.) won't work.

The ImageWriter LQ is an excellent printer, but it isn't perfect. The lack of a decent IIGS driver will limit its potential output. Hopefully Apple will correct this problem as soon as possible. And while 250 cps is fairly fast, Apple could have produced a faster printer. Also, the configuration switches at the rear of the printer's case are fairly difficult to reach.

The ImageWriter LQ manual has encountered the same "shrinking manual" disease that has infected all of Apple's other manuals. Programming information is definitely lacking. Fortunately, Addison-Wesley is releasing a technical reference manual (272 pages, $22.95 hardcover) that should be available in bookstores by the time you read this article. If you want to program the ImageWriter LQ manual directly, this publication is an absolute necessity.

If you want better quality text output, a wide print carriage or if multiple paper paths will help you, then the ImageWriter LQ — even without a specific driver for the IIGS — is the best printer now available.

— Philip Chien

Product: ImageWriter LQ
Price: $1,429 retail (with interface cable); cables available for DB-25 (Apple IIe), DIN-5 (Apple IIc), sub-8 DIN (Apple IIGS) $139 retail; AppleTalk option $25 retail; four-color process ribbon $19 retail; black ribbon
Company: Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010
Requirements: Apple IIGS, other Apple models
Warranty: 90 days; extended warranty available

RamKeeper

It Never Forgets

Performance: 8
Documentation/Support: N/A (beta copy)
Ease Of Use: 9
Value: 8
Overall: 8.33

The biggest IIGS problem is the speed of its disk drives. A IIGS can take several minutes to load the operating system and necessary files from a disk before the Desktop shows up on screen. It's frustrating, and there's no way to speed up the process.

A reasonable, fairly inexpensive bypass solution for many people is to use a memory board that retains its contents, even when the power is turned off. A IIGS supports two types of "memory disk drives": RAM disks (which lose memory when the power is off) and ROM disks (which keep their contents when the power is off). The latter option makes it easy to configure a memory-based disk drive emulator that automatically runs your favorite program within a couple of seconds of booting your IIGS.

Several memory boards include memory chips designed to keep their contents when the power is shut off. (The static RAM in the OctoRam ESP is an example.) However, these boards usually don't hold much memory. A solution that provides more memory is to use your current IIGS memory expansion board and supply the memory chips with constant power.

Applied Engineering's new RamKeeper essentially supplies constant power to existing RAM boards in the same way as the Checkmate MemorySaver board, reviewed in our Winter '88 issue. RamKeeper is a special power board that plugs into a IIGS expansion slot. Any existing memory board then plugs into this continuous power board.

The power board supplies constant power to the memory board, whether a IIGS' power is on or off. When the IIGS is off, the power board supplies power through its calculator-style AC converter. If you loose power for any reason, a rechargeable battery takes over to power the memory board.

We tested a preliminary RamKeeper board and found it quite easy to use. Although similar in design and function, there are differences between MemorySaver and RamKeeper. The MemorySaver board retails for $149, while RamKeeper retails for $179. One minor note on the prices: RamKeeper comes with gel cell rechargeable batteries. With MemorySaver, you have to purchase NiCad batteries (approximately $12) separately, making the actual difference in price $18 instead of $30.

The gel cell batteries used in RamKeeper are more powerful and efficient for computer use than the NiCad batteries used in MemorySaver. RamKeeper can keep your IIGS' memory intact for up to six hours in the event of a power failure. In addition, gel cells last longer than NiCad batteries for computer backup applications.

RamKeeper also includes built-in software. No diskette is necessary to operate RamKeeper. Just enter the Control Panel (Control-Open Apple-Esc) and choose RamKeeper. The menu includes a variety of diagnostic utilities, a memory map showing how much expansion memory has been allocated for use with the battery backup memory, and the commands to format and set up the board.

We liked the capability to change RamKeeper's memory size without loosing its contents. The RamKeeper board has a flexible configuration scheme that uses up to 12 MB of memory, using two 6 MB GS-RAM Plus boards. All of the memory, even with the two memory boards, looks like one bank of memory and can be split between normal IIGS expansion memory, RAM disk and permanent ROM disk memory. One limitation is that any memory attached to RamKeeper over 8 MB must be configured as part of the RamKeeper's ROM disk.

Operating as a ROM disk, your expansion board's memory will remain intact when your IIGS' power is off. However, memory can also be modified as required. If you get tired of running one program, want to upgrade to a new version or need to add new programs to your battery backup memory, all you have to do is copy your new files onto your RAM/ROM disk.

The IIGS memory map is rather confusing in that it allows up to 8 MB of RAM expansion and up to 8 MB of ROM. If you have more than 8 MB of memory, RamKeeper allocates up to 8 MB in the expansion RAM area and the rest in the ROM disk area. Even though your memory is on two different boards, it looks like one bank of memory.

The most confusing thing about RamKeeper is hardware compatibility, because RamKeeper lets you plug two different memory boards into your IIGS at the same time. RamKeeper is compatible with the Apple Memory Expansion board, MDIdeas' OctoRAM (partially), Orange Micro's RamPak 4GS, AST's RamStack and, of course, GS-RAM and GS-RAM Plus by Applied Engineering.

Most other boards also work, the primary limitation being the physical shape of the board. Will your board plug into RamKeeper's expansion slot and physically fit into your IIGS' case without causing any shorts? If so, it should work with the RamKeeper's edge connector slot.

The OctoRAM is a special case. It will work with RamKeeper, but you can only put six SIMMs (memory modules) on the board. The other two physically interfere with the RamKeeper board.

Ironically, one board having a physical space problem with the RamKeeper is Applied Engineering's own GS-RAM board. If you try to plug the GS-RAM into the edge connector, the GS-RAM's expansion pins will short out on the IIGS' case. Fortunately, there's another connector on the RamKeeper board: a female expansion connector on the front. With this connector you can attach two memory expansion boards to your IIGS at the same time — one on the front expansion connector, the other on the back edge connector.

In the two-board configuration, the RamKeeper is sandwiched between your two memory boards, with RamKeeper plugged into the IIGS' memory expansion slot. If you want to use two GS-RAM boards at the same time, Applied Engineering will upgrade one of your boards with a version that can be plugged into the back edge connector without interference.

Other options include a special slot extender that prevents the front expansion board from interfering with any board you may have installed in slot 7 of your IIGS. A DMA enhancement, for use with special boards that require a compatible DMA signal, is also available. As a rule, most combinations of memory boards should work with RamKeeper without any problems.

We tried loading the IIGS System Disk, AppleWorks and a variety of other applications into RamKeeper's ROM disk witout any problems. If you want your IIGS to run a RamKeeper application when you turn it on, then set the IIGS Control Panel startup slot setting to ROM disk. Then it's ready to go. Just turn on your IIGS. By the time your monitor has warmed up, you'll be in AppleWorks or on the IIGS Desktop. ■

— Philip Chien

Product: RamKeeper
Price: $179 retail
Company: Applied Engineering; PO Box 798; Carrollton, TX 75006; 214-241-6060
Requirements: Apple IIGS; compatible RAM expansion board
Warranty: Five years

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PC Transporter 768K	$495	**CMS Hard Drives**	
IIGS Installation Kit	$45	Compact Series	
IIe Installation Kit	$36	20 Megabyte (85ms)	$749
Single 360K Drive	$219	40 Megabyte (29ms)	$1099
Dual 360K Drive	$329	Stack Series	
Datalink Modem	$179	20 Megabyte (65ms)	$689
Ramworks III 256K	$169	43 Megabyte (40ms)	$899
Ramworks III 512K	$245	60 Megabyte (40ms)	$1049
Ramworks III I MEG	$399	**Digital Vision**	
Colorlink RGB Option	$105	Computer Eyes II	$119
RamFactor 256K	$209	Computer Eyes IIc	$119
RamFactor 512K	$285	Computer Eyes Color IIGS	$219
RamFactor 1 Megabyte	$439	**Epic**	
RamFactor Battery Backup	$145	2400 Internal	$165
RamFactor Expander 1 Meg	$549	**Kensington**	
Serial Pro	$125	System Saver IIe	$69
Parallel Pro	$69	System Saver GS	$79
Heavy Duty Power Supply	$59	Printer Muffler	$49
Transwarp Accelerator	$175	Turbo Mouse ADB	$89
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Central Point 3.5 800K	$189	ProGrappler	$79
Central Point Universal Drive Controller	$80	Imagebuffer 64K	$49
CH Products		Imagebuffer 128K	$69
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GS Memory Expansion

Because of the erractic RAM chip market, please call for pricing before ordering. We continue to make a strong commitment to offering our customers the lowest prices possible.

Applied Engineering	
GS-RAM 256K	$169
GS-RAM 512K	$245
GS-RAM 1 Meg	$399
GS-RAM 1.5 Meg	$559
GS-RAM Plus 1 Meg	$549
GS-RAM Plus 2 Meg	$949
AST Research	
Ramstack Plus 256K	$109
Ramstack Plus 512K	$170
Ramstack Plus 1 Meg	$315
MDIdeas	
OctoRAM 256K	$129
OctoRAM 512K	$175
OctoRAM 1 Meg*	$285
OctoRAM 2 Meg*	$475
*Using 256 SIMM Modules	
Orange Micro	
RamPak 4GS 512K	$219
RamPak 4GS 1 Meg	$369
RamPak 4GS 2 Meg	$669
Raw Memory	
for Orange RamPak	
256K RamPak Upgrade	$89
for AST, Applied, Checkmate and Apple	
ChipSet 256K-150ns	$74
ChipSet 256K-120ns	$79
(match speed of chip to existing board)	
for GS—RAM Plus	
1 Meg Chip Set for GS-RAM Plus	$400

Reader Circle Number 7

APW C

Apple's C For The IIGS

Performance: 9
Documentation/Support: 6
Ease Of Use: 7
Value: 8
Overall: 7.5

One of the best features of the Apple IIGS is that it's a powerful machine for a programmer. One of the worst features of the Apple IIGS is the lack of programming capabilities. Are these mutually contradictory statements? Not necessarily.

There are dozens of powerful programming utilities available in the Apple IIGS Toolbox firmware. However, these utilities can't be accessed from the IIGS' built-in language, Applesoft BASIC.

While Applesoft is adequate for beginners, it isn't a powerful programming language. BASIC has many limitations, including speed and power. At present, the most popular high-power programming languages for micros and minicomputers are Pascal and C. (We reviewed ORCA/M and TML Pascal in the Winter '88 issue of *The Apple IIGS Buyer's Guide*.)

Apple Computer, Inc. supports C as the first powerful, high-level programming language for the Apple IIGS. APW C: Apple IIGS Programmer's Workshop C was originally released with the first developer IIGS machines. As a result, many of the major applications commercially available for the IIGS were written using this version of C.

C is a powerful and flexible programming language. You can access every memory location directly if necessary, producing very compact, fast code. A program in C is relatively easy to read and debug, making it an excellent language for teaching and program distribution.

The C language, which is usually very portable, was originally designed to work with the Unix operating system and minicomputers. It has since been released in many versions for microcomputers. With minimum rewrites, you can take a C program designed for one system and convert it to work with another computer.

Apple's version of C is based on the Kernighan and Ritchie version of C and the Portable C Compiler, the most widely used version of C. Extensions have been added for the Apple IIGS for Toolbox access and other IIGS unique features.

When you purchase the APW package, you get an overview of the APW version of C and a disk that includes the Shell, Editor, Linker, Library, SANE (Standard Apple Numerics Environment — a set of high accuracy math functions) and the C compiler. The manual assumes that you already know how to program in C. This isn't a language for beginners!

If you are an experienced programmer, how can you get the Apple Programmers Workshop and other programming tools that are not available through typical Apple dealers? For quite a while, Apple — and most Apple dealers — ignored the technically oriented Apple owners. There were too few of them, and technical users were less profitable than most business customers.

Fortunately, that situation has changed. APDA, the Apple Programmers and Developer's Association, distributes Apple's technical information and software to interested parties. APDA doesn't serve as a training company or educational institution, but some technical support is available. Instead APDA acts as a clearinghouse to distribute software to individual programmers.

A yearly membership in APDA includes a newsletter, which reports on new products, changes and updates to products, and has access to Apple's technical notes and libraries. APW C is one of many programming products that APDA distributes for the Apple IIGS.

— Philip Chien

Product: APW C: Apple IIGS Programmer's Workshop C
Price: $75 retail
Company: APDA; 290 SW 43rd St.; Renton, WA 98055; 206-251-6548
Requirements: Apple IIGS; 1.2 MB RAM; two 3.5-inch drives or a hard drive

Calendar Crafter

A Colorful History

Performance: 9
Documentation/Support: 10
Ease Of Use: 9
Value: 8
Overall: 9

MECC enters the IIGS market with Calendar Crafter, a school utility designed to produce a variety of personalized calendars. The program takes advantage of the ProDOS 16 operating system, sports a version of the Finder (complete with selectable icons, files and folders) and has a Mac-like user interface. There are also menu bars, dialogue boxes and scroll bars. You choose menu options by pointing, dragging and clicking on the mouse.

Past and future events won't be easily forgotten with the graphics and notable date prompters in Calendar Crafter.

Calendar Crafter makes it possible for teachers and students to keep track of important days and occasions. It comes equipped with categories of canned dates, including U.S., Canadian and miscellaneous holidays; moon phases; and historical events.

Illustrations and holiday symbols indicate special days. For example, July 12 displays an American flag to remind us that on this day in 1984, Geraldine Ferraro became the first woman selected to run for vice president of the United States.

If you prefer to tag your own days, there's an icon file with 125 pictures. Each day can display up to two icons and a two-word text identifier for the first icon. You can insert an icon by double-clicking.

Use the edit feature if you want to modify an icon's appearance. To remove a marked event, simply click on the day to highlight it, select Remove Events from the menu bar and follow the on-screen prompts.

Calendar Crafter makes it possible to print calendars from the year one to the year 9999. By so doing the program offers many creative opportunities for students working on special history projects. You could design a calendar highlighting the important events of 1776, the Civil War (1861 to 1865), World War I (1914 to 1918) or any historical period.

A color monitor is optional, but preferred, especially if you plan to import and print pictures from other Apple IIGS paint programs or print in color on an ImageWriter II. Compatible pictures are bit mapped, so they use up a lot of memory. You will need at

least 768K to print an illustrated calendar. MECC recommends 1.25 megabytes to be safe.

The program disk comes with only 24K of free space. This is not enough to save a calendar creation, especially if you use pictures, multiple fonts and print styles. If you want to save your calendars, have a ProDOS-formatted blank disk on hand before you boot. If you do not have a storage disk available, all data in RAM will be lost when you exit the program to format.

Calendar Crafter has a preview option to view calendars prior to printing. Unfortunately, the only calendar type that previews well is one that prints one month per page. The others are only approximations. Their screen text is virtually illegible.

You can use one of seven languages (Danish, English, French, German, Italian, Spanish or Swedish) to title month and day headings. All foreign language text even has the appropriate diacritical marks.

Calendar Crafter is versatile enough for more than just classroom use. If you have a IIGS paint program, such as Paintworks Plus, Draw Plus, DeluxePaint II or Top Draw, you can design a calendar with a message and picture. When you are ready to print your work, you can choose from nine different fonts and a variety of font sizes. For printing, you need either an ImageWriter, an ImageWriter compatible or a LaserWriter. If you have a parallel printer, you can use the Prappler cable from Orange Micro, Inc.

Calendar Crafter is lots of fun and easy to use. Its well-written manual contains many helpful suggestions and a number of sample printouts. The program is copy protected.

— Carol S. Holzberg

Product: Calendar Crafter
Price: $59 retail
Company: Minnesota Educational Computing Corp. (MECC); 3490 Lexington Ave. N.; St. Paul, MN 55126-8097; 612-481-3500
Requirements: Apple IIGS; 512K RAM

Diversi-Key

The Keystroke Preserver

Performance: 10
Documentation/Support: 9
Ease Of Use: 9
Value: 10
Overall: 9.5

Much of what you type is repetitious. When writing a manuscript or letter, certain words or phrases are often repeated, and those who write BASIC programs quickly find themselves keying such phrases as PRINT CHR$(4) and CATALOG in their sleep. Wouldn't it be wonderful if we could simply press a single key and the computer would "know" exactly what word or phrase to type? With the right software, that dream can easily come true.

Diversi-Key adds macro capabilities to any application running under ProDOS 8 or ProDOS 16. A macro is a key or key sequence that, when pressed, does something other than its normal function. For example, usually when we press the key "T," our computer prints out the letter "T." In contrast, the macro "T" may print out "Hello, mom!"

Because we usually wish to preserve the alphanumeric keys in their normal state (it's difficult writing a manuscript without being able to use the letter "T"), macros usually entail defining key combinations that usually don't do anything useful, such as simultaneously pressing the Apple and "T" keys.

The popularity of macros is illustrated by the number of macro programs available. Beagle Bros., Inc., for example, has three macro programs — MacroWorks, SuperMacroWorks and UltraMacroWorks! Most of the macro programs available were written for specific applications software, most notably AppleWorks.

Diversi-Key is not installed on any specific application program; rather, it installs itself into the Apple IIGS hardware. This is similar in certain ways to classical desktop accessories, which are available from within any program. This feature — the availability of macros from within any program — differentiates Diversi-Key from similar applications.

Once Diversi-Key is run, it need not be installed again until you turn your computer off. Pressing the Option key causes an inverse "K" to appear in the upper right corner of the screen, indicating Diversi-Key is active. Installing Diversi-Key from a program selector, such as Prosel or the Desktop Finder, is even easier.

Unlike other macro programs that require the user to learn a set of commands, defining macros in Diversi-Key is simple. Simply press the "=" (equals) key on the numeric keypad while holding the Option key down to get Diversi-Key's attention. Diversi-Key suspends your current program and prompts you to press the keyboard key you wish to define a macro.

Diversi-Key then prompts you to enter all the keystrokes for that macro definition. When done, you simply press the Enter key on the numeric keypad and your macro is ready to use. Diversi-Key then returns you to your application and resumes its operation. Whenever you wish to use the macro, you simply hold down the Option key while pressing the corresponding keyboard key for the macro. Diversi-Key does the rest.

Diversi-Key also allows you to save macro definitions to disk. You may have any number of macro definition files on disk, each containing a different complement of macro definitions. For example, one macro definition file may contain all the macros you use in AppleWorks; another could contain all the macros used in MouseTalk.

Diversi-Key allows you to use alphanumeric keys in macros. You may also use control characters and such functions as Return, all four arrows keys, Delete, Tab and various keyboard symbols. We defined one word processing macro that sets up letters by placing a return address and the current date and time in the upper right corner of a page — all with a single keystroke.

Macros may also call other macros, thereby affording you the ability to call several macros in a prescribed order with a single keystroke. In addition, Diversi-Key's test functions (If, While and Test) and logical operators allow you to write macros that will perform different tasks, depending upon some condition or set of conditions.

For a machine language programmer, Diversi-Key macros may be called from within machine language programs, and the program's documentation provides easy directions on how to make such calls.

Diversi-Key is copyrighted shareware, meaning that owners are allowed to distribute the Diversi-Key system to others. Those who receive a copy of the program

may examine it for two weeks. If you decide to use Diversi-Key, you are required to submit payment to the publisher. Payment entitles you to user support (via telephone) as well as to any future product updates.

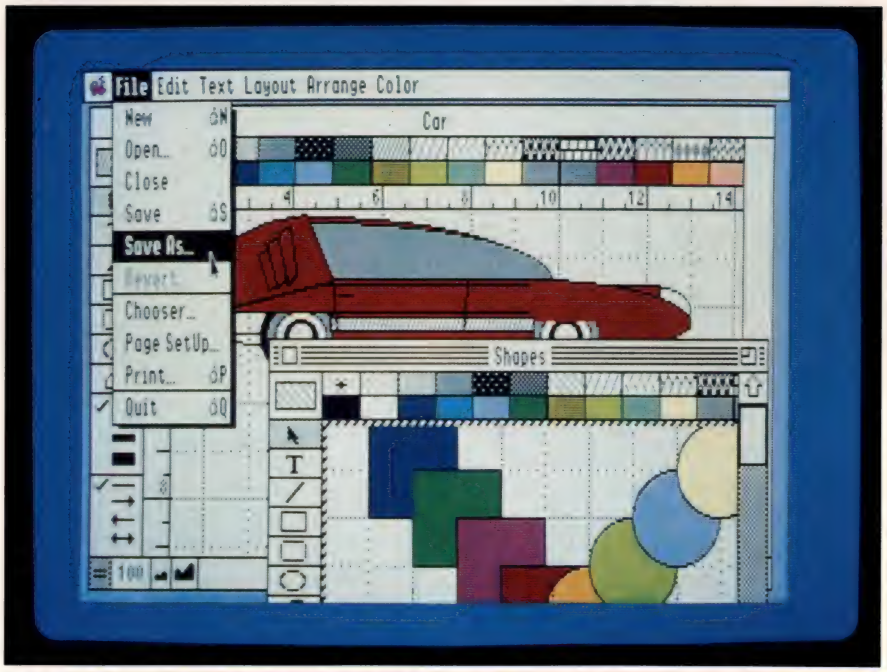
— Ken Buchholz

Product: Diversi-Key
Price: $45 retail
Company: Diversified Software Research, Inc.; 34880 Bunker Hill; Farmington, MI 48018-2728; 313-553-9460
Requirements: Apple IIGS; other Apple II models

The Graphics Studio And Draw Plus

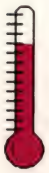
Draw And Paint Programs Compared

Users are given a free hand at moving images around and altering shapes with The Graphics Studio.



For precise mechanical drawings, Draw Plus offers rulers and transparent grids.

The Graphics Studio



Performance 8
Documentation/Support: 8.5
Ease Of Use: 8.5
Value: 9
Overall: 8.5

Draw Plus

Performance 9
Documentation/Support: 9
Ease Of Use: 9
Value: 9
Overall: 9

To a draftsperson or an artist, the technical differences between paint and draw programs are often crucial to the creative process. Paint programs frequently allow for more artistic freedom. Draw programs make it easier to do structured graphics.

Images or illustrations created with a draw program are independent of one another. You can peel them away from the drawing, move them around, change their shape and color or rotate them without interfering with the rest of the design.

When images are created with a paint program, however, they become an integral part of the drawing area. Different objects superimposed upon one another do not remain distinct. You cannot select just one of them to move around. Nor can you change their size or shape easily. Altering one part of the image by rotating or moving a portion of it frequently leaves a hole where that image used to be.

Newer paint programs, such as The Graphics Studio (TGS), give users more flexibility in moving items around, but it is very difficult to direct the cursor to target specific objects for movement. Things you don't want to select often get picked up.

DrawPlus (DP), a drawing program, lets you save your work either as a drawing or a painting. If you choose the latter, you can make changes to the picture using a paint program like Activision's Paintworks Plus, but you won't be able to manipulate the objects as if they were created by DP.

TGS (copy protected) and DP (non-copy protected) each require an Apple IIGS with a mouse, 3.5-inch drive and 768K. Additional RAM and a color monitor are optional, but

recommended. Be sure to have a blank formatted disk on hand to save the drawings you create. Neither program has a data-disk formatting option.

DP prints on an ImageWriter and LaserWriter; TGS prints only on an ImageWriter. If you have a parallel printer, you can use the Grappler cable from Orange Micro, Inc. for printouts with TGS.

TGS and DP are ProDOS 16 programs that take advantage of the IIGS firmware, expanded memory and graphics capabilities. Both are good at what they do. If you need tools to assist your freehand artistry, then go with TGS. If your goal is the scaled precision necessary to draw two-dimensional mechanical forms, architectural models and floor plans, then opt for DP.

Each program offers dozens of tools to assist the creative process. Each incorporates a Macintosh-like user interface, including menu bars, icons, scroll bars and dialogue boxes. To enlarge the drawing area, a number of drawing tools are hidden until you select their respective pop-up icons. Complex drawing operations are thereby reduced to the simple pointing, clicking and dragging of the mouse. Drawings can be saved, printed and copied.

When TGS finishes loading, the screen appears and displays four separate areas. The largest is the drawing area in the center for painting. When the mouse pointer is in the drawing area, the status line is visible. It lets you know which drawing tool is currently active. When the pointer is anywhere else, the menu bar displays the program's four functions: File, Edit, Options and Mode. Use these to open, save and print a picture.

A Revert function loads the previously saved version of a picture from a disk. You can cycle colors, remove the status line, work from two different palettes, change your screen resolution and select different paintbrush effects.

The menu offers many options. When a function is selected, its window stays open until the pointer exits. In this way, you can choose a number of items without having to pull down the menu more than once.

Beneath the menu bar are tool icons you can work with. Another menu at the bottom of the screen offers additional tools and displays the 16 colors currently active. There are freehand line-drawing tools to sketch straight, radiating and constrained lines; and box tools for making square and rectangular-shaped frames, concentric boxes, boxes with rounded corners, etc.

Other tools are used for making circles and ovals. If you don't like what you've created, you can undo your last action or click on the eraser to clear the screen. You can even erase an entire screen at once.

DP is similar to TGS in many respects. Its opening screen shows a drawing board with icons representing drawing tools. A palette indicates currently available colors and patterns. A menu bar sits at the top of the screen. Menu bar functions let you open, close, save or print your drawing files. Like TGS, there's a revert command to replace the drawing on the screen with the last saved version.

You can use such editing features as undo, cut, copy, paste, clear and move; choose a font for your typed-in text; manipulate the drawing board layout with rulers, grid lines and page breaks; select the drawing size; place designs on the drawing board front to back, rotated, flipped or grouped; and edit the color scheme.

To help with your layouts, rulers frame the top and left sides of the DP Drawing window. Transparent ruler lines crisscross a page, making it easier to line up and place objects. All program rulers are adjustable to suit your needs.

Another layout tool is an invisible grid that pulls drawn objects by 1/4-inch steps, thereby increasing accuracy. The grid feature can be toggled on or off by clicking on the appropriate item in the menu bar. Unlike the Grid feature of TGS, the distance between grid lines in DP cannot be altered.

In the TGS Full Page mode, you can work with a page that is two complete screens in length. A second separate screen, called the Clip screen, lets you use all the TGS tools available in the Full Page screen. Drawings can be copied or rotated from the Full Page to the Clip screen or vice versa.

While the DP work space is much the same size as the one in TGS, the entire DP Drawing window can be much larger than the Full Page screen of TGS. DP has a horizontal scroll bar to move the window left or right and a vertical scroll bar to move a drawing up or down.

Additional options are available for scrolling a drawing an inch or window at a time. These options come in handy for viewing a DP drawing that's as large as 6 feet long by 8 feet wide.

DP also has a Clip feature, but it's more like a Clipboard than an additional working space. DP's Clip screen is a temporary storage area that's never visible. You move objects from one part of the DP drawing board to another or from one drawing (you can have up to eight Drawing windows open simultaneously) to an entirely different drawing by cutting (or copying) and pasting.

When an object is cut or copied, it is removed to the Clipboard where it remains until you cut or copy something else.

The best way to learn how to work with TGS and DP is to experiment with all the tools each one has to offer. Both programs have a Zoom feature, useful for changing the scale of a drawing and doing detailed work in the Work screen. Both programs let you display your drawing on a full screen without the tools, palettes and menus taking up valuable work space. Both offer options to toggle the display between low, medium and high resolution. TGS starts off in low resolution; DP's default is high resolution.

TGS also has a Slide Show feature that loads pictures into RAM and runs them automatically. You can tell your computer how long to show each picture, how many times to show a picture and how long to wait before moving from one picture to another. It's possible to simulate animated motion. Just scroll through a series of similar pictures or use the Color Cycling feature to sequence through several color palettes.

Each program takes more than 2.5 minutes to load into memory. While you're waiting for the drawing screens to appear, read the manuals. You'll be amazed at what you can do if you take the time to work through all the options.

— Carol S. Holzberg

Product: The Graphics Studio
Price: $69.95 retail
Company: Accolade; 20813 Stevens Creek Blvd, Ste. 102; Cupertino, CA 95014; 408-446-5757
Requirements: Apple IIGS; 768K RAM

Product: Draw Plus
Price: $89.95 retail
Company: Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94043; 415-960-0410
Requirements: Apple IIGS; 768K RAM

List Plus

Rows And Columns

Performance: 5
Documentation/Support: 8
Ease Of Use: 8
Value: 7
Overall: 7

List Plus consumes a considerable chunk of memory, but makes database list arrangement relatively easy.

List Plus is Activision's entry into the world of Apple IIGS-specific database managers. Using the familiar Apple-standard graphics interface, a user can manipulate data quickly and efficiently using the mouse, pull-down menus and keyboard.

List Plus is not copy protected and you are encouraged to make and use a backup disk. List Plus documents can be saved in a specially formatted ASCII file that can be easily merged into documents for Writer's Choice Elite, Activision's IIGS word processor.

Documents are accessed through windows that make use of scroll bars and size, grow and close boxes. Multiple documents can be opened at once, simplifying the movement of data between documents. Category titles are listed across the top of the windows (columns), and individual entries are laid out left to right (rows). You can change this to a label-type layout if you wish.

The program's manual is well organized and easy to read. A tutorial leads you through a session by using some of the sample files included on the disk. A user quickly finds that the program is, for the most part, intuitive.

But some things take a little getting use to. For instance, all data is entered into a special Data Entry window. Data is stored in the selected cell only when an entry is complete. That is, after entering data into the Data Entry window, you can either press Tab to enter the data into the highlighted cell and move the cursor right one cell, or Return to enter it (the data) and move the cursor down.

You can also use the mouse to click on the OK box. The data will be entered, and the same cell will remain highlighted. Clicking on a different cell also enters the data and moves the cursor to the selected cell.

In addition to the sample files, there are several ready-to-use template files that come complete with category titles and finished layouts. All you need to do is enter the data. These templates cover some of the most common database applications, including an address book, a home inventory, a club member list and several others.

AppleWorks database files can be read into List Plus automatically. The resulting documents can be manipulated and saved like any others. While this is an attractive feature, it also exposes one of List Plus' major limitations: It's a memory hog.

With more than 490K available (determined by selecting About from the Apple menu), we attempted to load a 43K AppleWorks database file. List Plus ran out of memory, indicating that it uses a lot of overhead. List Plus will take advantage of as much memory as you have, but it requires much more than AppleWorks to maintain a large file.

Error handling is lacking, however. While loading the 43K file, a dialogue box appeared warning us that our memory was becoming full and that we should save the file. We clicked OK (the only available option), but nothing was saved; loading continued.

A new dialogue box appeared and said our memory was now full and that we should save the file. Again, we clicked OK. This time we got a new dialogue box that said there was insufficient memory for the operation.

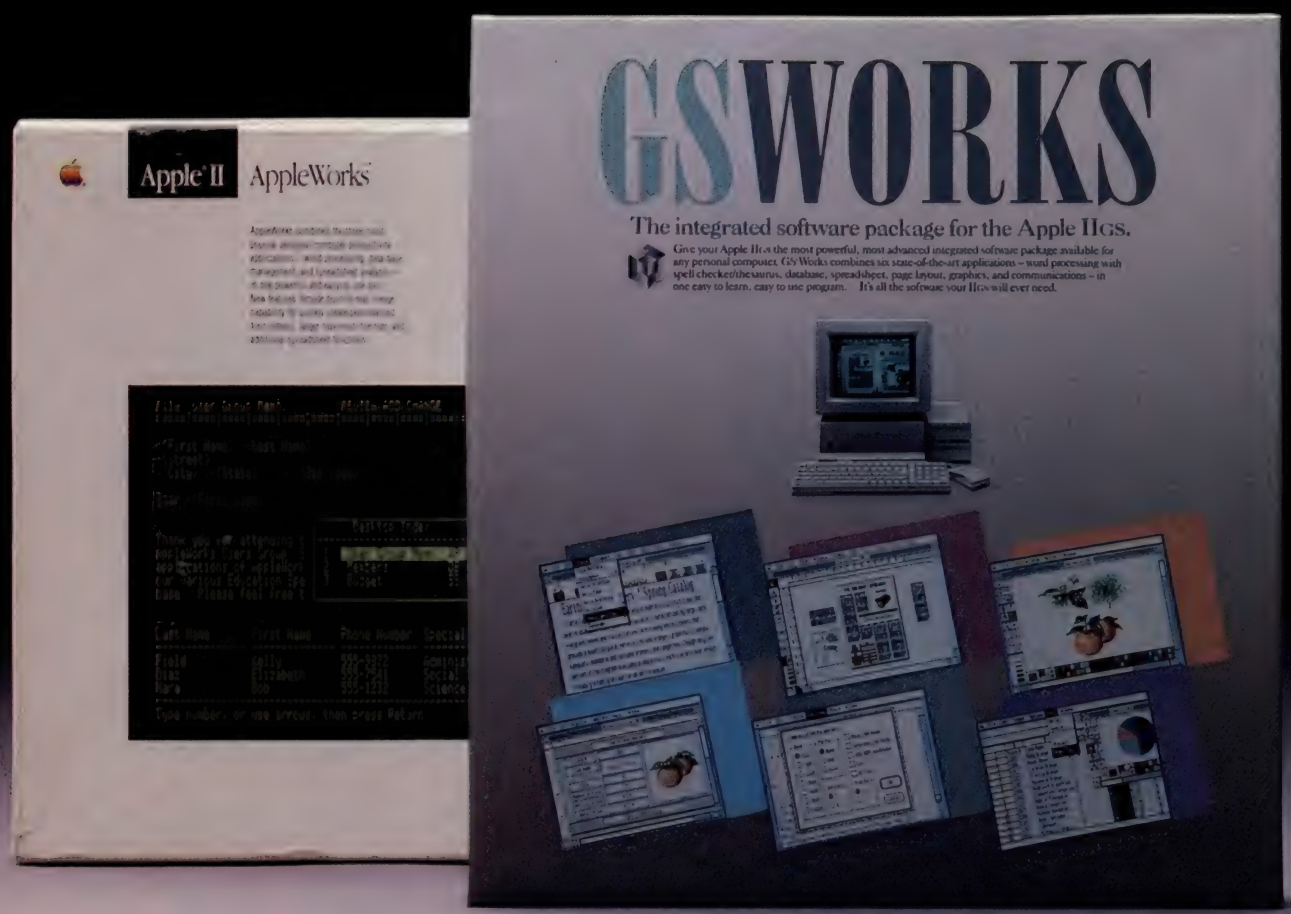
We also found that the program would consistently crash if we loaded an AppleWorks file and immediately clicked the form box, which toggles the display format between rows and columns and single entry.

Another problem is one inherent to just about all IIGS-specific applications to date: speed. A lengthy bootup period is required for List Plus, and graphics screen scrolling is slow. This is the price you pay for following Apple's standards.

Using small document windows reduces the scrolling problem, and you can speed up the booting process by using a hard disk or battery-backed RAM disk. Faster graphic routines and system software from Apple would solve these problems.

One of the real strengths of List Plus is flexibility. It is remarkably easy to rearrange column order, rename categories and change column widths to suit your needs. Sorting and arranging by column is also a snap and is very fast.

You can define entry attributes for entire columns (not just rows or individual cells), including date- and time-display formats, fixed decimal places, currency values and more. For example, defining a column to accept phone numbers allows you to enter "8005551212" and have it display as (800)-555-1212. This can be a real timesaver.


Apple II
AppleWorks
GSWORKS
The integrated software package for the Apple IIGS.
Give your Apple IIGS the most powerful, most advanced integrated software package available for any personal computer. GS Works combines six state-of-the-art applications – word processing with spell checker/thesaurus, database, spreadsheet, page layout, graphics, and communications – in one easy to learn, easy to use program. It's all the software your IIGS will ever need.

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(THIS IS NOW)

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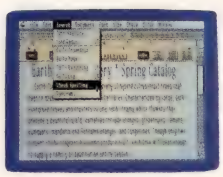
Better because it combines these six productivity applications in a seamless, window-based environment. To give you an integrated package so advanced — yet so easy to use — that it has no equal on any personal computer. Not even Macintosh™ or IBM™.

Better because it's all the software you'll ever need for your Apple IIGS.

Upgrading The Three AppleWorks Applications . . .



GSWorks reads AppleWorks files as easily as it reads its own. So you can move from AppleWorks to GSWorks without missing a byte.

But GSWorks improves on the three AppleWorks applications by giving them all the features of true IIGS software. All GSWorks applications work the same way, using pull-down menus and WYSIWYG ("what you see is what you get") document display. Making GSWorks easy to learn, easy to use.

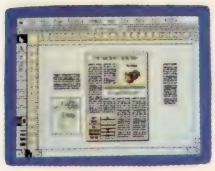
And each GSWorks application is so powerful, so complete, it could stand alone with the best IIGS software in its field.

Our high-powered word processor lets you create stylish documents using different fonts, print styles, and character sizes. With special features like automatic mail merge and the most advanced on-line spell checker/thesaurus ever available for an Apple II computer.

The versatile database lets you create forms, search and sort data, and print reports by just pointing and clicking. So you can keep track of even your most complicated information without complicated commands.

And for number-crunching, there's our mouse-based spreadsheet, with fast, intelligent recalculation and a host of number formatting features. And automatic color charting, when you want to make a splash with your figures.

. . . And Adding Three Of Our Own.



To give you *the* integrated software package for the Apple IIGS, we've added three new applications that fully exploit the advanced graphics, increased power, and enhanced communications connectivity of the IIGS.

Our state-of-the-art page layout application gives you the sort of desktop publishing power previously available only for Macintosh and IBM. To help you create professional-quality publications quickly and easily.

The GSWorks graphics application is revolutionary, combining the best features of draw and paint programs. With it, you'll have illustration capabilities never before available on a personal computer.

Finally, there's our communications application, connecting your IIGS to a whole world of on-line communications services. And letting you send and receive files from other computers.

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What really makes GSWorks special is that it's much more than the sum of its parts. It's not just six great applications in a single box. It's six great applications in a single program.

Because GSWorks offers a whole new level of sophistication in integrated software. You can have all six applications on-screen at once. And open as many application windows as you need.

Move from one application to another by simply clicking on a different window. And move information between applications with a single movement of your mouse. Bring spreadsheet figures into a database file. Edit communications files with the word processor. Use the page layout application to combine graphics and text in polished multi-column documents.

So now that you've upgraded your Apple, upgrade your AppleWorks. To GSWorks. Because AppleWorks was then. And GSWorks is now.

StyleWare

StyleWare, 5250 Gulfton, Suite 2E, Houston, Texas 77081

Toll-free GSWorks Hot Line number: (800) 458-3873

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An entire column or row can be copied easily within a document, and you can move or copy an entire column from one document to another. But you can't move or copy a *row* between documents. For example, if you wish to move one club member's data from the member list to the inactive list, you have to do it one item at a time. However, you can move all the phone numbers at once.

List Plus includes some mathematical capabilities, and can serve as both a database manager and spreadsheet. Date and time functions, text functions and all standard mathematical and statistical functions are included. Many of the functions only work within a column, but you can build formulas that work on a single row.

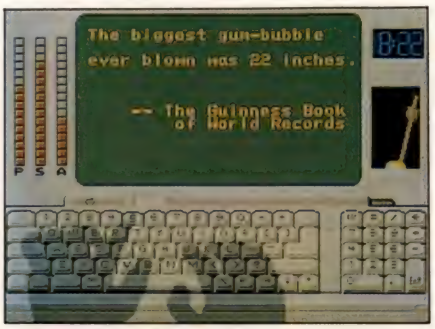
You can control the output print formats that define a row-and-column layout or a flexible label-type layout. You can set the display and easily switch back and forth between various display formats. As for printing, List Plus currently only supports the ImageWriter and LaserWriter printers.

List Plus is a fairly powerful database manager with limited spreadsheet capabilities. Easy to learn, friendly and fast in execution, it is slowed by the current state of the Apple graphic interface and somewhat hampered by its hunger for memory, its bias for column-based functions and a few bugs.

If you need more power than the AppleWorks database manager can give you, List Plus can be a good value, but try before you buy.

— Joseph T. Walters

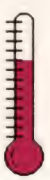
Product: List Plus
Price: $99.95 retail
Company: Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410
Requirements: Apple IIGS with the 2.0 ROM; 768K RAM; 3.5-inch drive; printer is recommended



Using artificial intelligence, this teacher tracks an individual's performance and designs lessons accordingly.

Mavis Beacon Teaches Typing

An Intelligent Typing Tutor



Performance: 7
Documentation/Support: 8
Ease Of Use: 8
Value: 8
Overall: 7.75

Anyone who spends much time at a computer keyboard soon learns the advantages of knowing touch typing. If you've been planning to learn to type or to brush up on your typing skills, Mavis Beacon Teaches Typing may be just the program you need.

This instructional program is appropriate for beginning, intermediate and advanced typists. It differs from other typing tutors in that it uses artificial intelligence capabilities to collect information about a typist's performance. The program then uses that information to design lessons to overcome any weaknesses detected.

When you first use the program, Mavis asks for specific information to help design the lessons. In addition to your name, it asks your age, proficiency level, the length of practice sessions you prefer and your words-per-minute goal.

Mavis Beacon Teaches Typing can accommodate numerous users, limited only by space available on the data disk. We signed on under a number of different identities to discover how Mavis varies lessons according to a user's age and proficiency level.

Novice typists begin with a series of lessons that demonstrate correct finger keyboard positions. Four or five keys are taught in each lesson. After each lesson, a learner has the opportunity to practice words and sentences that contain the keys presented. After each practice session, Mavis provides a report showing the actual and adjusted number of words per minute scored. The adjusted score reflects both speed and accuracy.

Intermediate and advanced typists can bypass the fingering lessons in favor of a series of diagnostic activities. Mavis uses the information obtained in these activities to construct later lessons to match the learners' needs.

Mavis helped us overcome such problems as a weak left hand and trouble striking keys — albeit, with the correct finger — in the wrong row. We also needed extra practice on the symbol keys.

Mavis uses a typist's age to select what kinds of information to include in its lessons. One program strength is that a typist is almost always asked to type real words and sentences, not meaningless letter patterns. Younger users type material consisting mainly of stories, jokes and riddles, while older users type famous quotes, sample employment tests and items from the *Guinness Book of World Records*.

Mavis incorporates four screens into the teaching process. The first is a Chalkboard, where a user learns the objectives of the lesson Mavis has planned. After a problem is identified and the remedy proposed, Mavis asks the user to concentrate on a particular skill aspect of typing.

The second screen is the Classroom, where the lesson is given and practiced. The Classroom screen shows the IIGS keyboard and a screen where the words to be typed will appear. The text appears in yellow. Correctly typed letters appear under each row in black; errors show in red.

"Guide Hands," which appear over the on-screen keyboard show the correct position of the fingers in striking the keys. The hands move as the keys are struck, demonstrating the proper keystroke. This feature may be turned off by a user.

For practice of specific skills, Mavis takes a user to the Workshop. Inside this area is a clock that shows elapsed time for timed drills; a metronome, which helps the user develop a typing rhythm; and three meters that show completion, speed and accuracy.

The final screen adds an arcade-style game element to the program. The game is a simulated auto race, where a user strives to type fast and accurately enough to stay ahead of a competitor who races at the typist's goal speed. If the user slows too much or makes too many typing errors, the competitor zooms ahead.

Mavis Beacon Teaches Typing provides a wealth of options. At the Chalkboard, for instance, a user can choose to begin the lesson Mavis prescribes or select an alternative. The alternatives include such options as changing a game to a drill, making another suggestion or creating a lesson.

Mavis provides a great deal of pertinent information. A series of graphs marking a user's progress is always available. The graphs show adjusted words per minute by session or by key, speed by key, accuracy by key, problem keys and number keys. One feature we liked is the Show Proficient Keys option. This feature shows which keys the user is typing at or above the target words-per-minute speed.

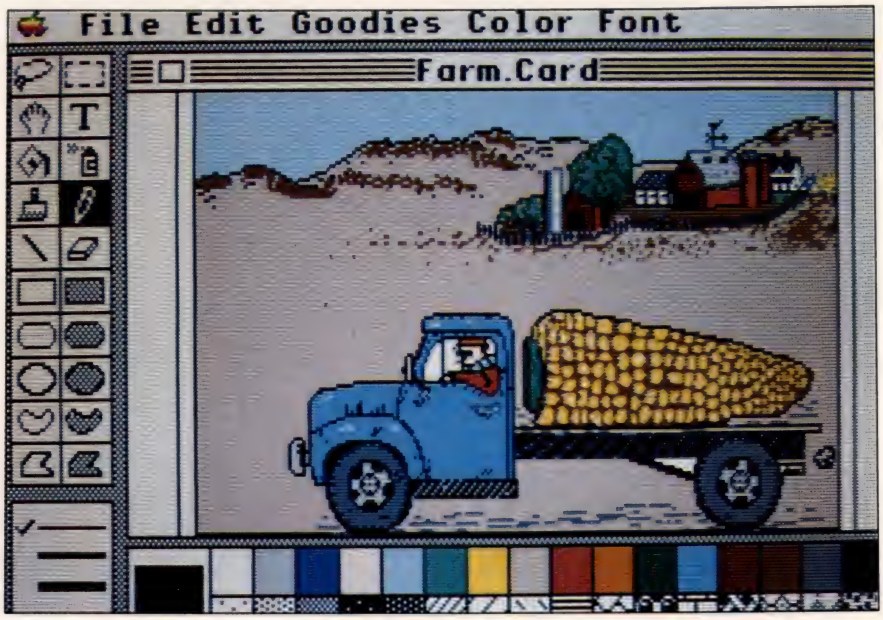
Although we are impressed with this program, its vendor has a few technical difficulties to work out. We found relatively minor bugs in the two sets of disks we had.

In both instances, we called the vendor and received courteous, helpful responses. In one case, the bug was known and had been fixed. In the other case, the technical support people had not heard of the problem before, but promised to track it down.

Overall, Mavis Beacon Teaches Typing is as fine a program for its purpose as we've seen. Its graphics are excellent, the instructions are clear, the activities are interesting and our typing skills have significantly improved. If you want to learn to type, this program is worth careful consideration.

— *Sandra Irish*

Product: Mavis Beacon Teaches Typing
Price: $44.95 retail
Company: The Software Toolworks; One Toolworks Plaza; 13557 Ventura Blvd.; Sherman Oaks, CA 91423; 818-907-6789
Requirements: Apple IIGS; 512K RAM



Down home on the farm illustrations can take on dramatic flavors with the Postcards design package.

Postcards

Watch Out Hallmark

Performance: 8
Documentation/Support: 7.5
Ease Of Use: 9
Value: 9.5
Overall: 8.5

A new collection of clip art from Activision injects a bit of humor into the creativity made possible by Paintworks Plus. With Postcards, you can fashion computer-generated postcards peppered with the strangest assortment of artwork images, including bikini-clad warthogs, hungry-looking alligators and a buck-toothed moose.

To use the more than 150 images on the non-copy protected Postcards disk, you need Paintworks Plus. (Version 1.2 or later of Paintworks Plus requires the new GS ROM).

While 512K gets you started, Postcards is memory hungry. Activision recommends that you outfit your IIGS system with at least 1.25 megabytes of RAM, especially if you plan to cut and paste lots of pictures or print hard copies of your creations.

There's no disk formatting option available from within the program, so you must remember to keep a couple of formatted blank disks on hand to store selected clip art.

Printing is easy if you have either an ImageWriter or LaserWriter. You can also get hard copy from a parallel printer using the Grappler cable from Orange Micro, Inc. or its equivalent.

If you are already familiar with Paintworks Plus, you won't have any problem using Postcards. All of the same paint instructions apply.

To access the clip art on the Postcards disk, first load Paintworks Plus into memory, pull down File from the menu bar and click on Open to view the catalog of Postcards files. You can choose any of 10 backdrop scenes as the setting for your clip art. The scenes include a desert or a farm, a moonscape and a volcano.

There's even a quaint-looking Main Street complete with a restaurant called "Mom's Diner." If none of these backdrops is of interest, there are two blank templates for designing your own postcards from scratch.

The backdrops and templates are the right size for using the card stock included in the package. Activision provides 25 blank cards to get you started, and additional stock is available. Also included with the software is a glue stick for pasting fanfold paper creations onto a card.

Once you've selected a backdrop, you can use the Lasso tool to encircle a piece of artwork for placement on the Clipboard. We would like to see an illustrated reference card of all the clip art images on the Post-

Through simple cut-and-paste techniques, Postcards makes it easy to say, "Wish you were here."

cards disk. Picking and choosing image titles from the reference card leaves a lot to chance.

If you want to add text, choose the T icon from the Paintworks Plus tool menu and type in a message. You can also return to the Clip Art disk, select the Letters file and lasso one of the canned captions. Then copy the caption to the Clipboard, reopen your previously saved backdrop file and paste the caption onto your card. Save all your changes and you're ready to print.

Postcards printed on a black ribbon dot matrix printer can be brightened up with crayons, markers or colored pencils.

You can use any of the Paintworks Plus paint tools to modify your artwork. For example, you can adjust the colors, add outlines or shadows, stretch images, make objects bigger or smaller, or mix and match images from the original Paintworks Plus Clip Art Gallery.

The program doesn't limit you to creating postcards. Activision suggests that you use the clip art, captions and alphabet to design anything from bookmarks to invitations, place cards, name tags, bulletin board memos, invitations and a whole range of special cards. It's also possible to paste Postcards clip art into a document created by Activision's Writer's Choice Elite.

Postcards clip art is not as zany as Activision would have you believe. If your intent is to design something a bit more serious than a dinosaur eating an ice-cream sundae, you have lots of room to maneuver.

— Carol S. Holzberg

Product: Postcards
Price: $29.95 retail
Company: Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410
Requirements: Apple IIGS with the 2.0 ROM; 512K RAM; Paintworks Plus

The TimeOut Series

FileMaster And QuickSpell

Performance: 8
Documentation/Support: 8
Ease Of Use: 9
Value: 8
Overall: 8.25

TimeOut is a set of seven independent utilities that work in conjunction with AppleWorks. Each of the seven programs enhances a particular function, and they can be used separately or together. The TimeOut programs require the U.S. version of AppleWorks, revision 2.0 (the latest).

For the most part, the TimeOut programs use keystrokes as similar as possible to their AppleWorks counterparts. If you know how to use AppleWorks, the most difficult part of learning how to use a TimeOut program will be the installation.

Installing TimeOut takes just a couple minutes, although you do have to decide how you're going to use the utilities. When you boot one of the TimeOut programs, the Installation menu will ask you where your AppleWorks disk is located and where you want to install the TimeOut applications.

You can store the utilities on the same volume as AppleWorks if there's enough room, put them on a separate disk, store them on a hard drive, or automatically load them into your computer's memory when you boot up AppleWorks. It's relatively easy to change TimeOut's configuration as your needs change.

All of the TimeOut applications are called by pressing the Open Apple (Command) key and the Escape key at the same time. You'll see a menu on your display that shows the TimeOut utilities you've copied onto your AppleWorks disk.

When you're using AppleWorks on a disk that has TimeOut installed, Reset — instead of entering machine language and losing your current files — will put you back at the main menu. This is a particularly useful function if AppleWorks has accidentally frozen for some reason (e.g., you tell it to print to a printer that doesn't exist).

Although the TimeOut manuals don't state it, whenever you hit Reset and re-enter a program, you should save all of your work files and then reboot the disk — just in case something else was changed accidentally.

Here's a closer look at two of the seven TimeOut programs: FileMaster and QuickSpell.

FileMaster gives you control over your files and disks from within AppleWorks. In principle, FileMaster gives you no new capabilities over Apple's System Utilities — it lets you do the same functions from within AppleWorks. With FileMaster you can copy, rename, delete, lock and unlock files; and copy, compare, rename, erase and format disks.

There are a couple minor flaws in FileMaster. Unlike other TimeOut applications, you have to select "Quit to AppleWorks" from a menu, as opposed to just hitting the Escape key. In addition, it's fairly difficult to change drives or directories in midstream. You have to select a new drive or directory from AppleWorks and re-enter FileMaster. It would be much more convenient if FileMaster had a change directory option in its menu.

FileMaster's brochures claim the utility "erases disks in less than two seconds, creating blank ProDOS data diskettes." That's a pretty bold claim, because it normally takes at least half a minute to format and erase a diskette on any computer.

As it turns out, the two-second figure refers to the time required to delete the directory off a diskette or, if you wish, the time to empty a disk that already contains data. It's a great way to reuse old disks filled with programs and data you don't need anymore, but FileMaster still takes the same time to format a disk as any other file utility program.

If you have different size disk drives (5.25-inch drives, 3.5-inch drives, RAM disks, hard disks, etc.), FileMaster will let you copy from a smaller volume to a larger volume. For example, you can copy a 5.25-inch 143K diskette onto a 3.5-inch 800K disk.

Naturally, the reverse won't work because the data on an 800K disk won't fit onto a 143K diskette. The advantage to this method is that it is much easier to back up your data, especially if you have only one of each size drive. The disadvantage is that your 3.5-inch disk now thinks it's a 5.25-inch diskette and can only hold 143K of data. Four-fifths of the disk will be useless and unavailable.

The only way to get back the extra space is by reformatting the disk. The simple way to avoid this problem is by not copying disks between different size volumes. If you do need to transfer your files, use the Copy Files function and select all of the files instead of using the Copy Disk function.

TimeOut packages control files, disks and spelling errors from within AppleWorks.

Overall, FileMaster is a versatile utility for enhancing AppleWorks and improving your throughput.

QuickSpell is a relatively fast spell checker that works inside AppleWorks. All you have to do is load your word processor file into memory, hit Open-Apple-Esc to enter TimeOut's main menu and select QuickSpell. It takes about three seconds to scan a 1,500-word document if QuickSpell is preloaded on a RAM disk.

QuickSpell uses the 80,000-word Random House dictionary as its main word source, which you can expand. Actually, the program uses three dictionaries: an internal built-in dictionary of commonly used words, a custom user-defined dictionary and the main dictionary. The result is a flexible arrangement where you can add your own special words, including proper names, professional terms, words missing from the dictionary and so on.

Besides spelling, QuickSpell also includes a word counter that tells you how many words, lines and characters are in a document.

QuickSpell gives you a list of the words it hasn't found in its dictionary. It also tells you how many questionable words and double words it found. The program checks each double occurrence (the same word typed twice) and asks if you want to remove the extra word.

The Context mode shows you how a flagged or suspect word appears within your document. A user can manually retype the correct word, add the word to a custom dictionary, ignore or skip over the word or ask QuickSpell for suggestions. The last option provides several possible correct spellings.

The 80,000-word dictionary is not all inclusive. Standard words such as *throughput, configured* and *communications* are missing, as are computer terms such as *desktop* and *IIGS.* Of course, you can add any missing word to your custom dictionary if you wish.

QuickSpell assumes the first character of a word is correct. While this normally isn't a problem, it can be if you make a typo. The program's dictionary is primarily limited to singular forms of words. We found many missing plurals.

One area that needs work is the suggestion system. The manual boasts that the program provides up to 29 different suggestions at a time. In practice, such a large number of selections makes the job more difficult, not easier.

It's hard to believe anyone could mistake *mussel, missal, missed* or even *misses* for *misspell.* However, all of those choices are given as possible correct spellings. A much better selection system would be appreciated for future versions.

While QuickSpell has its faults, it is fast and does an adequate job for most uses. It isn't the most sophisticated spell checker available for AppleWorks, but it does work from within AppleWorks and quickly.

All programs in the TimeOut series come with both 3.5- and 5.25-inch disk, and are compatible with the Apple IIe (128K enhanced), IIc and IIGS.

If you don't already have a 3.5-inch drive, we recommend that you purchase one for serious AppleWorks/TimeOut use. With a 5.25-inch system, you'll need a minimum of three and possibly as many as six diskettes. If you're using a 3.5-inch disk, there will be enough room to fit all seven TimeOut utilities and your AppleWorks program files on the same disk. By the way, all programs are copyable.

Another hardware feature that comes in handy is a large RAM card. RAM cards are used efficiently by TimeOut and AppleWorks. ■

— Philip Chien

Product: FileMaster/QuickSpell
Price: $49.95 retail; FileMaster $69.95 retail; QuickSpell
Company: Beagle Bros., Inc.; 6215 Ferris Sq., Ste. 100; San Diego, CA 92121; 800-345-1750; 800-992-4022 (in CA); 619-452-5500
Requirements: Any Apple II; AppleWorks; 5.25- and 3.5-inch disks supplied

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9. $3 shipping in U.S. $5 shipping to Canada.
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COD

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Reader Circle Number 9

Apple IIGS Hardware And Software Directory

About This Directory

The Apple IIGS is the latest member of the Apple II family. In most cases, the Apple IIGS runs the vast majority of programs and works with most hardware designed for earlier 8-bit Apple II computers, including the Apple IIe, IIc and II+. Most of this software is supplied on 5.25-inch disks, and a 5.25-inch disk drive may be required to run these packages.

The Apple IIGS also offers a new 16-bit capability. Programs or peripherals designed to take advantage of this capability incorporate improved graphics and sound and typically utilize more memory than found on earlier Apple II machines. In the case of software, most Apple IIGS-specific products use the ProDOS 16 operating system and are supplied on 3.5-inch disks.

In order for a vendor's program to be listed in this directory, the product must either be Apple IIGS-specific or at least available on a 3.5-inch disk. This is because many Apple IIGS owners do not own 5.25-inch disk drives, or they may opt for two 3.5-inch drives rather than one 3.5-inch drive and one 5.25-inch drive.

Every effort has been made to verify this information for readers. However, neither Redgate Communications Corporation nor *The Apple IIGS Buyer's Guide* assumes any responsibility for the accuracy of the product descriptions nor the suitability of any product for specific tasks. The product descriptions listed here are based on the latest information received from vendors.

Accessories

A-B Box
Switch box
Apple IIGS.

The A-B Box is a switch box that connects two peripherals to one serial port or lets you share one peripheral between two Apple IIGS computers. It comes with a 2-inch-Mini-DIN8 cable. The A-B Box is compatible with the Macintosh.
$99.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

Anti-Glare Filter IIGS
Cuts down glare
Apple IIGS.

The Kensington Anti-Glare Filter is designed specifically for the Apple IIGS color monitor. It reduces reflected glare by 91 percent, providing a simple solution to the annoying problem of screen glare. According to the vendor, it improves screen contrast and clarity by up to 16 times.

The Anti-Glare Filter is made of optical grade plastic, coated with three ceramic anti-reflection layers and a scratch-resistant layer. It attaches to a IIGS color monitor with adhesive fasteners included.
$49.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

Anti-Glare Screen MFM12
Anti-glare screen
Apple IIGS.

Data Spec's monochrome Anti-Glare Screen features a fine cross-hatch weave and cuts down on annoying glare by eliminating the halo surrounding each pixel. It includes a reversible black/beige frame and velcro attachment.
$35.95 retail
Data Spec; 20120 Plummer St.; PO Box 4029; Chatsworth, CA 91313; 818-993-1202

Apple Security System
Security kit
Apple IIGS.

The Apple Security System lets you secure an Apple IIGS computer, monitor, keyboard and peripherals without interfering with its functioning or setup. It attaches easily and comes with security cables, screws and a padlock.
$49.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

AppleTalk Clips
AppleTalk accessory products
Apple IIGS; AppleTalk network.

AppleTalk Clips are designed to keep an AppleTalk network securely connected. With these products, the chances for poor connections between printers and Apple IIGS computers, or networked IIGS and Macintosh computers, are reduced. Clips are available for securing cables (plain Cable connections) and for securing Connection Boxes.
$25 retail; 25 Clips for plain Cables
$13.75 retail; Three Clips for Connection Boxes, 4 Clips for plain Cables
$25 retail; 25 Clips for Connection Boxes
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

Bose RoomMate Speakers
Digital sound speakers
Apple IIGS.

Bose RoomMate Speakers contain full range drivers, a dual-channel amplifier, an equalization network and distortion-limiting circuitry. Their compact size, finish and advanced sound capabilities make them ideal for use with the Apple IIGS.
$229 retail; per system
Bose Corp.; The Mountain; Framingham, MA 01701; 617-879-7330

Cable Assemblies
Cable connections
Apple IIGS.

Data Spec offers a variety of cable assemblies compatible with the Apple IIGS and most Apple-compatible peripherals, including printers and modems.
$9.95 retail to $28.95 retail
Data Spec; 20120 Plummer St.; PO Box 4029; Chatsworth, CA 91313; 818-993-1202

Copy Stand
Reading and typing aid
Apple IIGS.

The Copy Stand relieves neck and eye strain. It makes word processing and data entry easier and more accurate by placing working copy next to the screen, directly in the eye's line of vision. The stand is molded of ABS plastic and is adjustable in all directions. It includes a copy clip and line follower.
$29.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

Disk Accessories
Disk cleaning kit and holder
Apple IIGS.

The Disk Drive Cleaning Kit for the Apple IIGS contains a reusable cleaning cartridge, cleaning disks and cleaning fluid. Everything is included for 12 cleanings, a full year's supply.

The Disk Pocket is a tray that attaches to the side of an Apple IIGS or monitor and stores up to 10 3.5-inch disks. No tools are required for installation. The Disk Pocket removes easily.
$29.95 retail; Disk Drive Cleaning Kit
$9.95 retail; Disk Pocket
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

Disk Drive Cleaner
Disk drive cleaner
Apple IIGS; disk drive.

The 3.5" Disk Drive Cleaner is designed for use with the 3.5-inch drives of the Apple IIGS. It

is a non-abrasive, wet-type system that includes a .5 ounce bottle of cleaning fluid and instructions.
$6.99 retail
Data Spec; 20120 Plummer St.; PO Box 4029; Chatsworth, CA 91313; 818-993-1202

DMS802 And DSM804

Data switches
Apple IIGS; peripherals.

The DSM802 and DSM804 are compact data switches with mini pin connectors. The DSM802 is a two-way switch with mini 8-pin DIN connectors. The DSM804 is a four-way switch with 8-pin connectors.

Both products are designed for use with an Apple IIGS, Macintosh II, Macintosh SE or Macintosh Plus computers. The DSM802 enables users to attach two peripherals to one computer; or two computers to one peripheral. The DSM804 allows users to link four peripherals to one computer; or attach four computers to one peripheral. A two-tone gray finish matches the Apple IIGS case coloring scheme.
$52.95 retail; DSM802
$59.95 retail; DSM804
Data Spec; 20120 Plummer St.; PO Box 4029; Chatsworth, CA 91313; 818-993-1202

Dust Cover For The Apple IIGS

Dust cover
Apple IIGS and monitor.

The Dust Cover For The Apple IIGS is a clear, anti-static cover that protects an Apple IIGS computer, monitor and keyboard.
$13.75 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

Dust Covers

Protect your computer
Apple IIGS.

Apple IIGS dust covers from Co-Du-Co come in tan, navy, royal, gray, red and brown. Unlike plastic covers, these covers allow heat from equipment to flow through the fabric. The covers are all-fabric machine washable and custom designed for IIGS contours.
$24.95 retail
Co-Du-Co; 4802 W. Wisconsin Ave.; Milwaukee, WI 53208; 414-476-1584

Flightstick

Aircraft joystick
Apple IIGS.

The Flightstick puts weapons controls at a users fingertips for quick reaction during aerial combat games. The pistol grip features 360 degree cursor control and looks and feels like a real flight stick. It is equipped with audio trigger and firebuttons that add reality to flight simulator programs. Flightstick can be used with computer-aided design and graphics applications as well.
$74.95 retail
CH Products; 1225 Stone Dr.; San Marcos, CA 92069; 619-744-8546

JuiceBox

Surge suppressor and fan
Apple IIGS.

The JuiceBox is a surge suppressor and fan for the Apple IIGS. It provides power protection for the IIGS, in addition to two switched outlets of surge suppressed power for other system peripherals. A third outlet powers other electrical devices, and an efficient fan system keeps cool air moving through the IIGS to prevent overheating.
$79 retail
Orange Micro, Inc.; 1400 N. Lakeview Ave.; Anaheim, CA 92807; 714-779-2772

Kablit

Computer and peripheral tie-downs
Apple IIGS; monitor; other peripherals.

Kablit for the IIGS is a cabling system that ties down and secures an Apple IIGS and peripherals. It uses snap-in fasteners for the computer and monitor and comes complete with all necessary hardware, in addition to a lock and cable.
$39.95 retail
Secure-It, Inc.; 10 Center Sq.; E. Longmeadow, MA 01095; 800-451-7592 or 413-525-7039

Kraft Joysticks

Joystick
Apple IIGS.

The Kraft Premium III is a three-button joystick featuring a "center-lok" mode selector that allows precise control in either spring-centered or free-floating applications.

The Kraft KC3 is a three-button joystick equipped with a spring-centered or free floating mechanism. It is warranted by the manufacturer for a year.
$44.95 retail; Kraft Premium III
$29.95 retail; Kraft KC3
Kraft Systems, Inc.; 450 W. California Ave.; Vista, CA 92083; 619-724-7146

Kraft Premium II

Joystick
Apple IIGS.

The Kraft Premium II is a two button joystick for the Apple IIGS. It is equipped with a "center-lok" mode selector for spring-centered or free-floating applications.
$32.95 retail
Kraft Systems, Inc.; 450 W. California Ave.; Vista, CA 92083; 619-724-7146

Kurta IS/GS

Cordless graphic input system
Apple IIGS.

The Kurta IS/GS is a cordless graphic input system for an Apple IIGS that includes either a cordless pen or a cordless puck and tablet. It can be used either as a mouse or graphics tablet. Users can switch between mouse and tablet modes while working on any application.
$495 retail
Kurta Corp.; 3007 E. Chambers St.; Phoenix, AZ 85040; 602-276-5533

Mach Joysticks

Two joysticks
Apple IIGS.

The Mach II Joystick is a two-button joystick that incorporates a slide-switch spring disconnect feature that requires no stick deflection. It is equipped with "spring-centering" or "positive-true-positioning" modes of operation, electrical trims for each axis, two fire buttons on the deck of the control and a stainless steel ball as the main pivot for added precision and durability.

The Mach III Joystick incorporates a slide-switch spring disconnect feature that requires no stick deflection.
$39.95 retail; Mach II Joystick
$54.95 retail; Mach III Joystick
CH Products; 1225 Stone Dr.; San Marcos, CA 92069; 619-744-8546

Modunet

Networking connectors
Apple IIGS; AppleTalk network.

Modunet is a line of networking connectors. The product conforms to AppleTalk standards, yet offers additional features, including adaptability to existing phone wiring. With Modunet, users can connect into existing telephone cabling or string new network wiring with standard telephone wires or modular telephone cables. Extended distances are possible, with communication capabilities of up to 5,000 feet. Three models are available.
$37.95 retail to $47.95 retail
Data Spec; 20120 Plummer St.; PO Box 4029; Chatsworth, CA 91313; 818-993-1202

Mouse Accessories

Accessories for mice
Apple IIGS; mouse.

The Mouse Cleaning Kit contains nonabrasive foam swabs, lint-free cleaning cloths, cleaning solution and a can of compressed air — everything, its vendor claims, most users will need for 25 cleanings a year.

Mouse Pocket ADB is designed to keep the mouse clean and safely out of the way when not in use. It installs with adhesive backing and is colored Apple Platinum.

Mouseway provides a smooth, dirt- and static-resistant work surface for the Apple IIGS mouse. It keeps the mouseball from scratching furniture surfaces and absorbing damaging furniture cleaning solutions. Its color is slate gray.
$24.95 retail; Mouse Cleaning Kit With Mouse Pocket
$9.95 retail; Mouse Pocket ADB
$9.95; Mouseway
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

MousePouch

Mouse container
Apple IIGS.

MousePouch is a place to keep your mouse when not in use. It is a vinyl suede pocket that attaches to the side of the Apple IIGS or monitor,

or any other convenient surface with Velcro. The product will also carry eight 3.5-inch disks.
$5.95 retail
H&H Enterprises; PO Box 2672; Corona, CA 91718; 714-737-1376

Printer Accessories

Printer accessory products
Apple IIGS; printer.

The Printer Muffler 80 and Printer Muffler 132 are printer covers that reduce noise from Apple IIGS printers by 75 to 80 percent. Molded from high-impact styrene plastic for durability, they keep dust out and are transparent. Both products are intended for use with dot matrix printers only with carriages of 80 and 132 inches.

The Printer Muffler 80 Stand and Printer Muffler 132 Stand are companions to the Printer Muffler products. They allow the user to raise a printer and Printer Muffler four inches, allowing for paper storage underneath.

The Universal Printer Stand is made of sturdy metal and fits all popular dot matrix printers, short carriage or wide, including the ImageWriter II. It raises a printer 1 1/2-inches at the front and 4 1/2-inches at the back. (For use without the Kensington Printer Mufflers.)
$69.95 retail; Printer Muffler 80
$89.95 retail; Printer Muffler 132
$29.95 retail; Printer Muffler 132 Stand
$19.95 retail; Universal Printer Stand
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

Smart Connector SMC25

Printer connector
Apple IIGS.

The Smart Connector SMC25 enables the Apple IIGS to connect to virtually any printer with a 25-pin serial port.
$39.95 retail
Data Spec; 20120 Plummer St.; PO Box 4029; Chatsworth, CA 91313; 818-993-1202

System Saver IIGS

Cooling fan power center
Apple IIGS; monitor; two peripherals.

System Saver IIGS organizes a IIGS power supply and provides four outlets for a user's computer, monitor and two peripherals. Two front-mounted switches control the power. One controls a user's computer and monitor, and the other controls the peripherals.

System Saver IIGS protects a IIGS system against power surges, spikes and noise. It clips spikes and surges at a safe level and filters out disruptive noise. A built-in fan draws air up and through the IIGS case.
$99.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

Turbo Mouse ADB

Replacement mouse
Apple IIGS; mouse attachments.

The Turbo Mouse ADB works at twice the speed of a standard mouse and in half the space, its vendor says. It turns mouse technology around and puts the mouse ball on top, not the bottom. Only the ball of the mouse moves, not the whole mouse. An automatic acceleration feature moves the cursor quickly across the screen.
$129.95 retail
Kensington Microware Ltd.; 251 Park Ave. S; New York, NY 10010; 800-535-4242 or 212-475-5200 in NY

Universal Security Kit

Physical security system
Apple IIGS.

The Universal Security Kit simplifies the task of providing physical security for the Apple IIGS. It includes adapters for the platinum-colored IIGS, along with a special screwdriver and 10 tamper-resistant screws that are used to secure the system. One 10-foot steel security cable is included; the user supplies a padlock or similar device.
$49.95 retail
Grimes Co.; 115 S. Arovista Circle; Brea, CA 92621; 714-671-3931

AppleWorks

1040Works-X

Copes with new tax laws
Apple IIGS; other Apple II models.

1040Works-X is a tax template for AppleWorks that provides most of the commonly-used tax forms for preparing individual tax returns. It performs all of the calculations for each form, computes tax payments and prints out finished forms that can be sent to the IRS without recopying.
$27.95 retail; $3 for 3.5-inch disk
Personal Financial Services; PO Box 1401; Melville, NY 11747; 516-261-8652

AppleWorks Version 2.0

Word processing, database management, spreadsheet analysis
Apple IIGS.

This latest version of this best-seller from Claris Corp., a subsidiary of Apple Computer, Inc., includes a built-in mail-merge capability that allows a user to produce customized form letters by combining a word processing document with selected information from a database.

Word processing features include on-screen display of page breaks, centering, headers, footers, insertions, deletions, search and replace, proportional spacing and more.

The electronic spreadsheet features 999 rows by 127 columns, reads VisiCalc files and sets variable column widths.

Database management features including tracking and sorting of up to 30 categories.

AppleWorks/Network is a software extension to the AppleTalk Network System. It is supported by the AppleShare File Server V 2.0 from Apple Computer, Inc, and the network version of this word processing, mail-merge, database management and spreadsheet program gives AppleWorks users all the benefits of the AppleTalk network.

One AppleWorks/Network application stored on the AppleShare File Server can support as many as 30 Apple IIGS users connected to an AppleTalk network. According to the vendor, AppleWorks/Network will be available after AppleShare File Server 2.0, Apple II Workstation Card and AppleShare IIGS are released this summer.
$250 retail; AppleWorks Version 2.0
$1,616 retail; AppleWorks/Network
Claris Corp.; 440 Clyde Ave.; Mountain View, CA 94043; 415-960-2790

FactWorks Volumes I — IV

AppleWorks encyclopedia
Apple IIGS; other Apple II models; AppleWorks.

FactWorks Volumes I — IV are programs accessed through AppleWorks. Users can search and sort thousands of facts in over 120 database files. Topics include everything from Popes to Presidents; Academy Awards to famous authors; World Series winners to Nobel Prize winners and more. The programs are designed to teach students how to use a database in research and writing.
$37.95 retail
ImagiMedia Software; 16640 Roscoe Pl.; Sepulveda, CA 91343; 800-544-3228 or 818-894-1131

Graphic Edge

Prints graphics
Apple IIGS; other Apple II models; 128K.

Graphic Edge creates color charts and graphs directly from within AppleWorks spreadsheets. Users can generate any of eight different types of graphs, including bar graphs, pie charts and X-Y graphs. A link between Graphic Edge and AppleWorks automatically redraws graphs anytime numbers are changed.
$89 retail
Pinpoint Publishing; 5865 Doyle St., Ste. 112; Emeryville, CA 94608; 415-654-3050

Loan Qualifier

Spreadsheet template
Apple IIGS; other Apple II models; AppleWorks.

The Loan Qualifier is designed as a tool for mortgage brokers, loan officers and real estate agents. The template can handle purchases or refinances with first or second mortgages; seller-carrybacks; and assumptions or equity loans under fixed, variable or blended rates. It calculates all financing costs and qualifying values. A detailed report can be printed for loan comparisons and client hand-outs.
$99 retail
Financial Microware; PO Box 40; Cupertino, CA 95015; 408-446-5639

The TimeOut Series
AppleWorks enhancements
Apple IIGS; AppleWorks; each program requires 128K.

The TimeOut Series is a family of AppleWorks enhancements that work from inside AppleWorks. TimeOut QuickSpell corrects spelling in context or from a list of misspelled words; TimeOut Graph creates nine graph types; TimeOut SuperFonts prints with high-quality Macintosh fonts; TimeOut UltraMacros memorizes keystrokes, provides mouse control, macros and built-in commands; TimeOut SideSpread prints spreadsheets sideways; TimeOut FileMaster performs all file and disk operations, and quickly loads or saves any size RAM disk; and TimeOut DeskTools comes with calendar, calculator, note pad, dialer, clock and more.
$69.95 retail; TimeOut QuickSpell
$69.95 retail; TimeOut SuperFonts
$89.95 retail; TimeOut Graph
$59.95 retail; TimeOut UltraMacros
$49.95 retail; TimeOut SideSpread
$49.95 retail; TimeOut FileMaster
$49.95 retail; TimeOut DeskTools
Beagle Bros., Inc.; 6215 Ferris Sq., Ste. 100; San Diego, CA 92121; 800-992-4022 in CA (orders), 800-345-1570 (orders), or 619-452-5500

WriteWorks
Better writing in AppleWorks
Apple IIGS; other Apple II models; 256K.

WriteWorks is a stand-alone package that makes the AppleWorks word processor into a more powerful, more flexible word processing system. The package provides a number of features, including unlimited custom printers on a single disk, footnotes located at the bottom of the page, test printing of files to the screen, unlimited page numbering, support for all printer codes and compatibility with all hardware and software configurations.
$29.95 retail
W*A*R* Software; 4974 N. Fresno St., Ste. 282; Fresno, CA 93726

Books And Publications

1001 Things To Do With Your Apple IIGS
From games to science

1001 Things To Do With Your Apple IIGS provides users with ways to use their Apple IIGS computers for everything from games and household record-keeping to scientific analysis and business management. The book is packed with ideas for saving time and money. It also includes listings of programs using graphics and sound.
$12.60 retail; paperback
$18.95 retail; hardbound
Tab Books, Inc.; PO Box 40; Blue Ridge Summit, PA 17214-0850; 717-794-2191

Advanced AppleWorks — 2nd Edition
Insight into AppleWorks

Advanced AppleWorks — 2nd Edition provides a complete update of the new features of AppleWorks Version 2.0. The book discusses business applications such as spreadsheets for comparing loan rates and terms, projecting product sales and performing price analyses. It covers databases such as a mailing list, an inventory system and a card catalogue.
$17.60 retail
Tab Books, Inc.; PO Box 40; Blue Ridge Summit, PA 17214-0850; 717-794-2191

Apple IIGS Assembly Language Programming
Tutorial on assembly language

Apple IIGS Assembly Language Programming is a tutorial that provides a complete introduction to the machine's architecture, the process of developing a program in assembler, the command set of the 65816 processor and the links between the assembler and the IIGS Toolbox. Included is also a set of examples of commonly-used procedures.
$24.95 retail
Bantam Books, Inc.; 666 Fifth Ave.; New York, NY 10103; 212-765-6500

Apple IIGS Firmware Reference
Guide for programmers and hardware designers

The Apple IIGS Firmware Reference is a technical guide for programmers creating software for the Apple IIGS. It provides an extensive description of the internal operations of an Apple IIGS and presents the latest information about its firmware facilities.
$24.95 retail
Addison-Wesley Publishing Co., Inc.; Rte. 128; Reading, MA 01867; 617-944-3700

Apple IIGS Hardware Reference
Guide to Apple IIGS hardware

Designed as a companion volume to the Apple IIGS Firmware Reference, the Apple IIGS Hardware Reference provides an extensive description of the mechanisms and internal operations of an Apple IIGS. It also presents the latest information on all the machine's hardware.
$24.95 retail
Addison-Wesley Publishing Co., Inc.; Rte. 128; Reading, MA 01867; 617-944-3700

Apple IIGS Machine Language For Beginners
Assembly language tutorial
Apple IIGS.

Apple IIGS Machine Language For Beginners is a book designed for use with the Merlin 8/16 assembler. It starts by reviewing Peeks, Pokes and Calls in Applesoft BASIC and progresses through 20 chapters of how to write mouse-based, menu-driven programs. The book also includes information on writing ProDOS 8 and ProDOS 16 system files, all 65816 commands and Apple IIGS tools.

The vendor offers a companion disk for the book, the Apple IIGS Machine Language On Disk. It contains source files for the programs mentioned in the book.
$19.95 retail; book
$15.95 retail; disk for book
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

Apple IIGS ProDOS 16 Reference
Technical reference source with software

The Apple IIGS ProDOS 16 Reference is Apple Computer, Inc.'s guide to ProDOS, the premier operating system for the Apple IIGS. The reference is packaged with ProDOS 16 software and the System Loader. The book documents ProDOS 16, the System Loader and software that works in concert with ProDOS 16.
$29.95 retail
Addison-Wesley Publishing Co., Inc.; Rte. 128; Reading, MA 01867; 617-944-3700

Apple IIGS Technical Reference
Apple architecture book

The Apple IIGS Technical Reference explores the inner workings of an Apple IIGS. All operating modes are explained so that readers can write software that runs on 8- or 16-bit systems.

The book reveals insights about an Apple IIGS' built-in software, the ROM operating system, the disk, serial input/outputs and the IIGS Toolbox.
$19.95 retail
Osborne/McGraw-Hill; 2600 Tenth St.; Berkeley, CA 94710; 415-548-2805

Apple IIGS Toolbox Reference, Vols. I and II
Toolbox description book

The Apple IIGS Toolbox Reference is a two-volume set that describes the Apple IIGS Toolbox. The Toolbox itself is a collection of more than 600 ready-to-use routines that enable users to access the capabilities of the Apple IIGS.
$26.95 retail
Addison-Wesley Publishing Co., Inc.; Rte. 128; Reading, MA 01867; 617-944-3700

Exploring The Apple IIGS
Graphics and sound programming guide

Exploring The Apple IIGS is a technical introduction to the inner workings of a IIGS. It includes studies that tell how an Apple IIGS is built and how it works.

The book discusses the architecture and capabilities of the Apple IIGS' microprocessor, software development environments, ProDOS 16, memory mapping, super-high-resolution graphics and more.
$22.95 retail
Addison-Wesley Publishing Co., Inc.; Rte. 128; Reading, MA 01867; 617-944-3700

Human Interface Guidelines
Defines the Apple standard

The Human Interface Guidelines from Apple Computer, Inc. defines the desktop interface used in Apple IIGS-specific programs. The book

describes the mouse pointer, windows, dialogue boxes, buttons, pull-down menus, scroll bars and other features. It begins with a history of the desktop interface and describes its implementation on Apple family computers.
$14.95 retail
Addison-Wesley Publishing Co., Inc.; Rte. 128; Reading, MA 01867; 617-944-3700

ImageWriter LQ Reference

Technical reference source for printer

The ImageWriter LQ Reference, written for programmers and serious hobbyists, provides techniques for implementing the advanced features of the ImageWriter LQ, Apple's new Apple II and Macintosh-compatible printer. Descriptions are given for the hardware and software switches that control printer setup; commands that select character sets and features; and more.

Written and produced by Apple Computer, Inc., the ImageWriter LQ Reference provides authoritative information necessary for programming this new printer.
$22.95 retail
Addison-Wesley Publishing Co., Inc.; Rte. 128; Reading, MA 01867; 617-944-3700

Programmer's Introduction To The Apple IIGS

Definitive programming book

The Programmer's Introduction To The Apple IIGS explains essential concepts for programming the Apple IIGS. The book demonstrates event driven programming techniques, programming with the Apple desktop user interface, effective use of the Apple IIGS Toolbox and how to write segmented, relocatable code that will make programs run more efficiently. Other topics include file handling, memory management, program launching and writing specialized programs such as shells and desk accessories.

The book is accompanied by a 3.5-inch disk which includes both source code and executable versions of HodgePodge, a functioning sample program written in 65816 assembly language, C and Pascal. The book is to be released in June, 1988.
$32.95 retail
Addison-Wesley Publishing Co., Inc.; Rte. 128; Reading, MA 01867; 617-944-3700

Programming The 65816

Teaching manual and reference guide

Programming The 65816 introduces essential programming concepts for those writing software for the 65816, 65802 and related microprocessors. For example, three chapters introduce the architecture of three generations of microprocessors. The 65802 and 65816 share a single chapter because they execute the same instruction set. A teaching section surveys all 256 instructions, grouped into six categories.
$24.95 retail
Brady Books/ Prentice Hall; One Gulf + Western Plaza; New York, NY 10023; 212-373-8232

Programming The Apple IIGS In C And Assembly Language

Tap the IIGS

Programming The Apple IIGS In C And Assembly Language helps the reader take advantage of the added power, speed, graphics and sound capabilities of the Apple IIGS. The book is a source for programmers who want to program in C and to integrate assembly language routines into their programs. Among the topics included are a look at the 65816 microprocessor, the APW compiler, the IIGS Toolbox, windows, menus and more.
$18.95 retail
Howard W. Sams & Co.; 4300 W. 62nd St.; Indianapolis, IN 46268; 317-298-5400

Technical Introduction To The Apple IIGS

Software conversion book

The Technical Introduction To The Apple IIGS is written for programmers who want to write their own software or adapt programs to an Apple IIGS. It provides an overview of the general design, system architecture, programming environments, Toolbox, graphic modes and sound capabilities of a IIGS.
$9.95 retail
Addison-Wesley Publishing Co., Inc.; Rte. 128; Reading, MA 01867; 617-944-3700

The Apple IIGS Book

Historical overview

The Apple IIGS Book chronicles the Apple IIGS computer from conception to development. It begins with a user's reference guide that explains basic computer concepts and working procedures, then explains the features of an Apple IIGS, the computer's 16-bit environment and some of its new software.
$18.95 retail
Bantam Books, Inc.; 666 Fifth Ave.; New York, NY 10103; 212-765-6500

The Apple IIGS Toolbox Revealed

Read before programming

The Apple IIGS Toolbox Revealed introduces the reader to crucial concepts before starting to program. Programming newcomers can take a look inside the computer and some of its circuits, and can learn about programming languages and how to choose the appropriate one. Experienced Apple II programmers can learn how the Toolbox works and how to incorporate its routines into C, Pascal and assembly language programs.
$21.95 retail
Bantam Books, Inc.; 666 Fifth Ave.; New York, NY 10103; 212-765-6500

Business And Productivity

BusinessWorks

Business accounting software
Apple IIGS; two 3.5-inch disks or hard disk; 80-column printer.

BusinessWorks is a full-featured accounting program comprised of the following modules: General Ledger, Accounts Payable, Accounts Receivable, Inventory Control, Payroll and the System Manager. The modules may be purchased separately or as a bundle. If purchased as a bundle, Payroll is not included.

Features of the program include on-line help, which is available at almost every prompt; pop-up windows that list needed account numbers and other information; password security; an interface that looks and acts like AppleWorks; and more.
$195 retail; each module
$95 retail; System Manager
$495 retail; complete system bundle
Manzanita Software Systems; One Sierra Gate Plaza, Ste. 200-A; Roseville, CA 95661; 800-531-3552 or 800-447-5700 in CA

DB Master Version 5

Versatile database management system
Apple IIGS; other Apple II models; 128K.

DB Master Version 5 is the latest and most powerful version of the DB Master family. It uses menus, text line input and a "dynamic prompting system" to help users build sophisticated database applications on the Apple IIGS. The product works with all ProDOS disk drives and most RAM disks and easily exchanges data with other programs, including AppleWorks. DB Master Version 5 also offers several field types.

From the main menu, 33 separate functions are available, grouped into four categories: Data Entry and Search, Report Generator, Maintenance Functions and Change Files or Exit. The program comes with a 450 page manual and technical phone support.

DB Master Version 5 Professional brings multi-file, relational capability to the DB Master user.
$179 retail; DB Master Version 5
$295 retail; Professional Version
$500 retail; DB Master Version 5/Multiuser
$500 retail; DB Master Version 5/Classroom
Stone Edge Technologies, Inc.; PO Box 200; Maple Glen, PA 19002; 215-641-1825

Dental Office Management IIP

Dental office management
512K Apple IIGS; SCSI hard drive; 3.5-inch disk drive; 130-column printer.

Dental Office Management IIP provides a mouse-selectable integrated application for patient billing, claim form preparation, appointment scheduling, patient transaction histories, treatment records/plans and word processing.

The system will handle up to 10 dentists/-hygienists and 9,000 patients and will maintain appointments for a year.
$1,995.95 retail
CMA Micro Computer; 55888 Yucca Trail; PO Box 2080; Yucca Valley, CA 92286-2080; 619-365-9718

Desk Manager
Five ways to clean a desk
Apple IIGS; other Apple II models.

Desk Manager is designed to handle all the notes, memos, thoughts and appointments that need to be recorded each business day. The program features pull-down windows that allow users to operate all five programs at once.

The Letter Writer features cut and paste, search, move and other features found in stand-alone word processors. The Note Pad keeps track of short memos and lists things to do. The Calendar will track appointments on a daily basis and can be viewed by day or month.

The Address Book can be configured to the user's tastes and will search and sort entries and print labels. The Calculator features a memory where results can be stored and pasted into the Letter Writer.
$39.95 retail
Softsync, Inc.; 162 Madison Ave.; New York, NY 10016; 212-685-2080

GS File
Graphical database management system
Apple IIGS; 512K.

GS File is a mouse-oriented database manager designed specifically for the Apple IIGS. It simulates a real desktop and appears very much like a Macintosh program.

The program is RAM-based and works similar to AppleWorks. Pull-down menus are used to design, edit and print files with the mouse. The program's report generator allows users to visually control how printouts appear.
$99.95 retail
Softwood Co.; 1311 Anacapa St.; PO Box 90331; Santa Barbara, CA 93190; 805-964-8622

List Plus
Database and report generator
Apple IIGS; 768K.

List Plus is a full-featured IIGS database and report generator for keeping up-to-date business or personal records, mailing lists and labels, customer lists, name and address files, etc. It features a mouse interface and pull-down menus and allows users to input data easily and without prior setup. Reports are generated using the Quicklist feature.
$99.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Managing Your Money
Financial Planning/small business package
Apple IIGS; 256K; two disk drives.

Managing Your Money combines nine integrated programs in one to help users organize and analyze their financial affairs, from basic checkbook management to complex investment tracking.

More than 200 help screens are provided in the program on subjects ranging from investment portfolios, taxes, life insurance needs and net worth. The program is integrated and generates a variety of reports.
$149.95 retail
MECA Ventures, Inc.; 355 Riverside Ave.; Westport, CT 06880; 203-226-2400

Medical Office Management IIP
Medical office system
Apple IIGS; 512K; SCSI card; SCSI hard disk; 130-column printer.

Medical Office Management IIP is a mouse-selectable integrated application for patient billing, claim form preparation, appointment scheduling, patient transaction histories, medical records and word processing. It will handle up to 10 doctors and 9,000 patients. A year's appointments can be maintained on the system for scheduling and recall of patients for their physicals and checkups.
$1,995.95 retail
CMA Micro Computer; 55888 Yucca Trail; PO Box 2080; Yucca Valley, CA 92286-2080; 619-365-9718

Notes 'N Files
Database and word processor
Apple IIGS; 512K.

Notes 'N Files combines a database filing system with a word processor-like editor. The product includes full mail-merge and mailing-label management capabilities. According to its vendor, Notes 'N Files also offers a desktop environment with graphic representation of filing cabinets, office stationery, etc.

Other features include direct import of AppleWorks files, choice of font size and typefaces, and a customized mailing list capability.
$129.95 retail
DataPak Software, Inc.; 14011 Ventura Blvd., Ste. 507; Sherman Oaks, CA 91423; 800-327-6703 or 818-905-6419

Personal Accountant 2.0
Personal accounting system
Apple IIGS.

Personal Accountant 2.0 has a desktop interface resembling the Macintosh. Data can be entered using either a mouse or the keyboard, and files can be exported to most spreadsheets. The latest version is a financial package designed for personal and small business use. It contains an easy-to-use double entry bookkeeping system and automatically posts entries to the general ledger.
$49.95 retail
Softsync, Inc.; 162 Madison Ave.; New York, NY 10016; 212-685-2080

Profiler 3.0
Database management system
Apple IIGS; other Apple II models; 128K; hard disk drive recommended.

Profiler 3.0 uses both a textual and mouse-based interface. Its B-tree file saving format works fast and efficiently. The Apple IIGS text screen is used for input and output, but an Apple mouse can be used for menus and record selection.

Each Profiler 3.0 record can be up to eight screens long, and fields can occupy the entire screen. This makes very large entries possible, including directory material.
$129 retail
Pinpoint Publishing; 5865 Doyle St., Ste. 112; Emeryville, CA 94608; 415-654-3050

Salary Magic
Salary spreadsheet
Apple IIGS; 512K.

Salary Magic is a spreadsheet/database program designed to calculate employees' salaries, benefits and annual raises.

Salary schedules are created quickly, and tools are provided to make what-if projections individually and collectively. Raises, benefits and experience can be taken into account and recalculated based on alternatives to current proposals.
$395 retail
Magic Software, Inc.; 1706 Galvin Rd. S.; Bellevue, NE 68005; 800-342-6243 or 402-291-0670

Tax Preparer
Tax accounting software
Apple IIGS; 64K .

The latest edition of Tax Preparer contains information for filing under the Tax Reform Act. The new edition also contains major advances in speed, automation and ease of use.

Among the programs' automated features are on-screen support to guide users through the program, a calculator scratch pad, unlimited itemizing and built-in record keeping.
$250 retail
HowardSoft; 1224 Prospect St., Ste. 150; La Jolla, CA 92037; 619-454-0121

The Food Processor II
Nutrition analysis
Apple IIGS; other Apple II models; two disk drives.

The Food Processor II analyzes nutrients in diets, menus and recipes. This database of 2,400 foods and 30 nutrients is compiled from 350 sources of information and three years of research.

Deficiencies and excesses in the diet are displayed graphically and numerically for both American and Canadian standards; special ratios calculated; daily intakes can be averaged; nutrients per serving calculated; and more. The program is suitable for schools, colleges, hospitals, corporate wellness programs and fitness centers, food service organizations and homes.
$250 retail
ESHA Research; PO Box 13028; Salem, OR 97309; 503-585-6242

The Public Domain Exchange
Public domain software and shareware
Apple IIGS.

The Public Domain Exchange offers public domain and shareware software specifically for the Apple IIGS. Public domain software is freely copyable and the author requires no fee for its use. For shareware, users are obligated to send a small donation to the author if they find the programs suitable to their needs.

The disks contain a variety of programs that take full advantage of the graphics and sound capabilities of the Apple IIGS. Included are desk accessories, telecommunication programs, musical selections, graphics utilities and artwork.
$9 retail; each disk
$49.95 retail; special (includes 10 disks)
The Public Domain Exchange; 2074C Walsh Ave., Dept. 71; Santa Clara, CA 95050; 408-496-0624

Trio
Integrated word processor, database, spreadsheet
Apple IIGS; other Apple II models.

Trio combines three computer programs on a single disk. It is designed with on-screen prompts, plus pull-down windows for instant on-screen help. An integration feature allows information to be passed from one module to another.

Trio Word is a word processor that features find and replace, full word wrap, undo, left/right justify, center text, underline, bold, italics, flexible print and label configuration, insert and delete modes, and more.

Trio Calc offers a large flexible work sheet that uses a natural order of recalculation to automatically update the spreadsheet whenever a change is made. Cells, or blocks of cells, can be copied, moved or erased.

Trio File gives a user the flexibility to design many types of databases. It searches, sorts and prints records and labels.
$59.95 retail
Softsync, Inc.; 162 Madison Ave.; New York, NY 10016; 212-685-2080

VIP Professional
Integrated spreadsheet
Apple IIGS;
extended memory card recommended.

VIP Professional is an integrated spreadsheet with database and graphics features. It incorporates the features and functionality of Lotus 1-2-3, as well as a mouse interface with pull-down menus and icons. The program offers file compatibility with Lotus 1-2-3 and AppleWorks, thereby allowing users to move spreadsheets from one program to another.

The latest version offers performance improvements in recalculation speed and other areas.
$299.95 retail
ISD Marketing, Inc.; 2651 John St., Unit 3; Markham, Ontario, Canada L3R 2W5; 416-479-1880

Visualizer
Business graphics
Apple IIGS.

Visualizer is a business graphics program designed to take advantage of the graphics capabilities of an Apple IIGS, including color, mouse support, fonts and pull-down menus.

Features include the ability to display title and legend boxes; more than 100 colors for text and graphs and a graph background that can be displayed in different color patterns.
$99.95 retail
PBI Software, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-349-8765

Creative

816/Paint
Color graphics program
Apple IIGS; other Apple II models; color monitor.

816/Paint software supports the 4,096-color super-high-resolution mode on the Apple IIGS. The latest version supports all Apple color graphics modes, including the 320 and 640 modes. The program also works with several popular graphics printers, including Epson and Apple models.

Users can scale, rotate, stretch or paint any object on screen. The program can be used to illustrate "video slides," to produce clip art for desktop publishing or as a form of entertainment.
$75 retail
Baudville, Inc.; 5380 52nd Street SE; Grand Rapids, MI 49508; 616-698-0888

Award Maker Plus
Award-style graphics
Apple IIGS; printer.

Award Maker Plus is graphics software designed to create awards, certificates, licenses, coupons or other documents. It is compatible with The Print Shop from Broderbund and has 12 border designs that can use any of 14 colors.

Users can choose their own custom high-resolution pictures on award styles or choose from 286 prepared award styles. Users can also choose text styles, enter messages and select colors.
$39.95 retail
Baudville, Inc.; 5380 52nd Street SE; Grand Rapids, MI 49508; 616-698-0888

Car Builder
Scientific simulation program
Apple IIGS; other Apple II models.

Car Builder allows users to design, construct, modify and test cars in a scientific simulation program. It teaches principles involved in building an aerodynamic, efficient and safe car. The designs may be printed out, and an unlimited number of different cars can be designed and stored. An instruction manual provides tables of information on automobile components to help users make selections. The program is designed for ages 8 to adult.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 800-327-1473 or 203-542-5553

Clip Art Gallery
Clip art software
Apple IIGS; graphics program.

Clip Art Gallery is a database of more than 600 images designed for use with several Apple IIGS graphics programs. It consists of pictures in 24 categories, including business, school, sports, American themes, animals, bugs, fantasy, outer space, gadgets, people and holidays.

The product is designed to work with Paintworks Plus and Writer's Choice elite, or any other IIGS-specific paint or word processing program.
$29.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Deluxe Library
Clip art software
Apple IIGS: DeluxePaint II.

Deluxe Library is a family of color clip art disks for DeluxePaint II. Art Parts, Volume I contains more than 175 color images, including faces, maps, charts, birds, plants and fantasy art ranging from dinosaurs and African landscapes to alien creatures.

Art Parts, Volume II contains more than 100 color images in 12 categories, including astronomy, military, interiors, seascapes, people, store fronts, farms and nature.

Seasons & Holidays contains art for holidays, including New Year's Eve, Easter and Fourth of July.
$29.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

DeluxePaint II
Paint software
Apple IIGS; 768K; color monitor.

DeluxePaint II contains more than 90 painting tools and effects, including perspective, custom brushes, variable zoom, stenciling, fixed backgrounds, gradient fills, pattern fills, color cycling, font control and symmetry.

Users can copy or pick up any piece of a painting, and use it as brush or fill pattern. The "brush" image can be rotated, stretched and flipped (vertically or horizontally), or used as a nozzle on the Airbrush tool.
$99.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

DeluxePrint II
Design your own messages
Apple IIGS; 768K.

DeluxePrint II is a creativity program for designing cards, signs, banners, letterhead, labels and calendars. A full-featured editor allows users to create their own clip art or modify over 200 images found on the program disk.

Users can also import clip art or background art from DeluxePaint II or other popular IIGS paint programs.
$49.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Design Your Own Home, Architecture
Rewritten for the Apple IIGS
Apple IIGS; 512K; ProDOS 16.

Design Your Own Home, Architecture, has been rewritten to provide new features and a new user interface. The program enables the user to draw floor plans, view building plans and structural details with ease. Shapes can be rotated, scaled up and down or arranged in numerous ways on the screen.

The program also features zoom, scales, grids, stud/beam repeater function and color printing.

The vendor says that an interior and a landscape version are coming soon.
$89.95 retail
Abracadata; PO Box 2440; Eugene, OR 97402; 503-342-3030

Draw Plus
Drawing software
Apple IIGS.

Draw Plus is a full color drawing program that can be used together with Paintworks Plus, Writer's Choice elite and Clip Art Gallery to create and customize graphics and documents in limitless ways.

With Draw Plus, users can create floor plans, logos, forms, letterheads, flow charts and organizational charts, furniture arrangements, presentation graphics, landscape designs and more.
$89.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Fantavision IIGS
Animation and special effects
Apple IIGS; 256K; color monitor.

Fantavision has been rewritten to make full use of the Apple IIGS' color, speed, sound and super high-resolution screens. Using "Tweening and Transformation" tools, a user can create detailed animation without needing to be an artist or expert animator.

With Tweening, Fantavision can create up to 64 intermediate frames of animation for each user-drawn image. Transformation enables Fantavision to automatically transform one object to another.

The enhanced sound capabilities of the Apple IIGS are also supported.
$59.95 retail
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903-2101; 800-527-6263

Image Master: Basic Paint
Paint program
Apple IIGS; 512K.

Image Master: Basic Paint supports a variety of methods for creating simple animations. A user is allowed to work with up to 136 colors on screen at one time and to create over eight million color mixtures.

General features include zooming, text with graphics, cut, paste and copy, mirrored painting and inverting colors. Additional features of the program include 64 built-in palettes, color editing, custom brushes, smooth shading and full screen painting. Images may be printed on the ImageWriter or ImageWriter II.
$44.95 retail
Jada Graphics, Inc.; 7615 S. 48th St.; Omaha, NE 68157; 800-634-4552

Paint Write Draw
Three programs in one
Apple IIGS; 512K; color monitor; 1.25 MB suggested when using Writer's Choice elite.

Paint Write Draw is a combination of three products: Paintworks Plus, a paint/graphics/animation program; Writer's Choice elite, a full-color word processor with graphics integration; and Draw Plus, an object-oriented precision drawing tool. The new product also includes Clip Art Gallery, a collection of over 600 colorful, ready-to-paste images.
$179.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Paintworks Gold
Sophisticated paint program
Apple IIGS; RGB monitor; 1MB expansion card.

Paintworks Gold offers more than 80 new features over its predecessor, Paintworks Plus. For example, it allows users to work on two full pages for creating art. The second page can also be used as a separate document or as a draft copy of page one. In addition, the second page can be used as a fixed background for page one, allowing both pages to be saved as a single picture. Color masking allows the user to select colors that can be protected from being painted over.

Other features include 3D perspective; setting of vanishing points so that 3D is automatic; selection of any area on screen for painting; gradient color blending, allowing selection of 16 colors and four gradient patterns; use of multiple transparent colors (up to 16 colors); four levels of Fat Bits magnification; color control; compatibility with all IIGS graphic standards; and more.
$99.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Paintworks Plus
Paint program
Apple IIGS.

Paintworks Plus allows Apple IIGS computer users to produce multicolored graphics which can come alive in animated sequences. The program contains a Clip Art Gallery, with over 600 images.

The color imagery uses all 4,096 separate colors and up to 128 customized color palettes may be saved for future reference. Other features include a color search that identifies all areas of an image that use any color or color shade; a mirror option that provides the ability to draw symmetrical shapes; and a lasso that gives users the power to move any image without capturing the background.
$69.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Postcards
Creative paint and print product
Apple IIGS.

Postcards is a collection of crazy clip art, bizarre backgrounds and creative captions that can be used for making postcards, invitations, office notes, momentos and more. The Apple IIGS version requires the use of Paintworks Plus.
$29.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

ShowOff
Professional-looking visuals
Apple IIGS; 512K.

ShowOff is designed to help users produce overhead transparencies, 16-color printed sheets and IIGS interactive video slide shows. The program includes over 380 graphics, 140 borders and a variety of type styles and sizes. In addition, ShowOff offers a built-in graphics editor and design tools that let users create original graphics.
$59.95 retail
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903-2101; 800-527-6263

The Graphics Studio
Do-it-yourself studio
Apple IIGS; 512K; color monitor.

The Graphics Studio is designed for creative artists from novice to professional. It features cutting and pasting from a full screen clipboard and text compatibility with all GEM font options. Color cycling capability can also be used to produce animated pictures.

Drawings can be rendered in an 8.5- by 11-inch format by utilizing the automatic shadowing option, a color palette of 512 colors and a pattern library with 24 preset options, each of which can be altered. Text can then be added in five sizes and different type styles. Graphic images and text can be saved to a disk or printed on a compatible printer.

The Graphics Studio also features a variety of drawing tools including freehand and line drawing, rays, circles, ovals, polygons, flood and line fill (horizontal and vertical), and spray paint capabilities.
$49.95 retail
Accolade; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Top Draw

Design software

Apple IIGS; 512K; color monitor.

Top Draw is an object-oriented drawing program that offers structured graphics and Macintosh-like features similar to MacDraw. Drawings are based on mathematically defined shapes that can be moved, grouped, placed on top of one another, duplicated, reshaped, resized and filled with patterns and colors.

Objects can also be flipped vertically or horizontally, rotated in 90-degree increments and protected from unintentional editing or deletion.

$89.95 retail

StyleWare, Inc.; 5250 Gulfton, Ste. 2E; Houston, TX 77081; 713-668-1360

Desk Accessories

Deskpak Volume I

Version 1.5

Apple IIGS.

Deskpak is one of the first desk accessories designed for the Apple IIGS. It provides 10 Macintosh-like accessories installed and used from the Apple menu. The program includes File Tools, a Calculator, a System Security Lock, File Printer and more. Deskpak is compatible with all IIGS software using an Apple icon in the menu bar.

$59.95 retail

Simple Software; 4612 N. Landing Dr.; Marietta, GA 30066; 404-924-2667

DeskWorks

A collection of utilities

Apple IIGS.

DeskWorks combines the standard desk accessories familiar to Macintosh users — a scrapbook and notepad, for example — with additional accessories, including a phone dialer, scientific calculator, keyboard macros, a scrapbook for storing graphic images and an alarm clock. The product includes a utility for blanking the IIGS screen when the computer is not in use.

$59.95 retail

StyleWare, Inc.; 5250 Gulfton, Ste. 2E; Houston, TX 77081; 713-668-1360

Pinpoint Desktop Accessories

ProDOS enhancements

Apple IIGS; other Apple II models; 128K; two disk drives; AppleWorks 1.3 or later version or selected ProDOS applications; extended memory card recommended.

Pinpoint Desktop Accessories offers a complete selection of pop-up tools designed to enhance AppleWorks or other selected ProDOS programs. Its eight applications include Appointment Calender, Calculator, Communications Window, Telephone Dialer, Graphmerge, Notepad, Quicklabel and Typewriter.

With Pinpoint Desktop Accessories, an entire program remains resident in RAM while AppleWorks (or other ProDOS programs) continue in the foreground.

$89 retail

Pinpoint Publishing; 5865 Doyle St., Ste. 112; Emeryville, CA 94608; 415-654-3050

Pinpoint Starter Pak

Three-in-one package

Apple IIGS; 256K.

The Pinpoint Starter Pak combines three of Pinpoint Publishing's programs onto one 3.5-inch disk: the Pinpoint Desktop Accessories, Spelling Checker and KeyPlayer macro keys. The three programs include a total of 10 accessories that can be pre-installed.

$149 retail

Pinpoint Publishing; 5865 Doyle St., Ste. 112; Emeryville, CA 94608; 415-654-3050

Softswitch

Desk accessory

Apple IIGS; 512K.

Softswitch is a desk accessory that allows users to switch among several applications loaded into RAM. It installs automatically and allows users to cut and paste regular and double high-resolution screens between certain graphics programs, such as The Print Shop, Fantavision, Blazing Paddles, LogoPrint and others.

The program is able to revert from the current program to an earlier state, enabling the user to switch back and forth between different locations in the same program.

$59.95 retail

Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

TDM Super Accessories #1

Add-on ProDOS accessories

Apple IIGS; 512K; The Desktop Manager.

Super Accessories #1 for The Desktop Manager is a set of add-on accessories that provides 10 utilities available within all ProDOS 8 and ProDOS 16 applications. A user can pop-up The Desktop Manager menu during word processing, database, or spreadsheet programs, and select accessories to use.

The disk contains file type changer, character ruler, regular file viewer/printer, keyboard lockout, a clock with job timer capabilities and more.

$39.95 retail

On Three, Inc.; 4478 Market St., Ste. 701-702; Ventura, CA 93003; 805-644-3514

TDM Toolkit

The TDM helper

Apple IIGS; 512K; The Desktop Manager; APW assembler.

The TDM Toolkit contains the information needed to create a user's own accessories that work under The Desktop Manager. It provides information on the internal architecture of TDM along with a complete listing of the internal tools that an accessory can use.

TDM contains a variety of routines that an accessory may use. Creating folders, inputting text, displaying errors, displaying or printing information, issuing ProDOS calls, file selection and more are provided. Examples are included on disk in APW assembler format.

$39.95 retail

On Three, Inc.; 4478 Market St., Ste. 701-702; Ventura, CA 93003; 805-644-3514

The Communications Manager

Desktop communications

Apple IIGS; 512K; The Desktop Manager.

The Communications Manager works in conjunction with The Desktop Manager from the same vendor. It runs as an accessory on the Apple IIGS and provides most standard telecommunications features, including Xmodem and Binary II file transfer protocols, fast downloading and more.

$49.95 retail

On Three, Inc.; 4478 Market St., Ste. 701-702; Ventura, CA 93003; 805-644-3514

The Desktop Manager

Unclutters the desktop

Apple IIGS; 512K.

The Desktop Manager is a full-featured desk accessory that runs with most ProDOS 8 and ProDOS 16 applications. It includes: a Note Pad with word processing features such as word wrap and automatic repagination; a Calculator with 16-digit precision and paper tape printout; a Printer Manager for printer control; an Envelope Labeler for defining mailing labels; an ASCII chart; a Screen Print facility; Cut and Paste between applications; and an Appointment Calendar.

All accessories run in the background. In addition, the program is expandable with other add-on accessories from the vendor.

$89.95 retail

On Three, Inc.; 4478 Market St., Ste. 701-702; Ventura, CA 93003; 805-644-3514

The Disk Manager

Utilities from within any program

Apple IIGS; 512K; The Desktop Manager.

The Disk Manager accessory works with The Desktop Manager from On Three, Inc., and provides access to several disk functions from any program. They include: list files to screen; print files; copy files between disks; delete, rename and lock/unlock files; copy disks; format and erase disks; verify disks; create subdirectories; and more.

$39.95 retail

On Three, Inc.; 4478 Market St., Ste. 701-702; Ventura, CA 93003; 805-644-3514

Video Link

Access to video laser players

Apple IIGS; 512K; laser disc player.

Video Link is a desk accessory utilizing a simulated remote control via graphic icon buttons. It allows a user to access a laser player while inside

another software program. For example, a presentation can be made to an audience utilizing images from the laser player, and, at the same time, text or drawings can be done on the screen from inside a graphics program. Video Link is designed for use by educators, lecturers and training programs.
$79 retail
Knowledgeware; PO Box 2292; Paso Robles, CA 93447; 805-238-5233

Viva Presents!

Controls videodisc players
Apple IIGS; 512K; videodisc player.

Viva Presents! is an object-oriented interactive video authoring system for the creation of interactive video computer-based-training, intuitive educational courseware, visual information retrieval systems, visual entertainment and simulation products. The program also provides graphic output for presentations, reports and more.

Viva Presents! combines the power of an icon based user interface with an interactive extensible scripting language. Through the use of a visual construction set, commands represented by icons, the user can put together a visual story-board for the interactive presentation he is writing. The product taps the full power of the graphics and sound of the Apple IIGS.
$179 retail
Knowledgeware; PO Box 2292; Paso Robles, CA 93447; 805-238-5233

Desktop Communications

ASCII Express

Powerful communications package
Apple IIGS; other Apple II models; modem.

ASCII Express is a complete telecommunications program that has advanced and flexible features. The program includes a built-in editor, macro system, terminal emulation, unattended operation and more.

ASCII Express supports all popular modems and data transfer speed of up to 9,600 baud.
$129.95 retail
United Software Industries; 8399 Topanga Canyon Blvd., Ste. 200; Canoga Park, CA 91304; 800-332-7244 or 818-887-5800

MouseTalk

Telecommunications
Apple IIGS; other Apple II models; modem.

MouseTalk is a telecommunications product that uses a Macintosh-like interface and features a mouse-driven operating environment and pull-down menus.

Program features include a built-in, full-screen text editor and macro system and the ability to use keyboard commands as an alternative to a mouse, unattended operation and terminal emulation.

MouseTalk accommodates data transfer speeds up to 19,200 bits per second on the Apple IIGS and is compatible with most popular modems.
$99.95 retail
United Software Industries; 8399 Topanga Canyon Blvd., Ste. 200; Canoga Park, CA 91304; 800-332-7244 or 818-887-5800

Point-To-Point

Telecommunications program
Apple IIGS; other Apple II models; two disk drives; 128K; extended memory card recommended.

Point-To-Point opens an Apple IIGS to the world of telecomputing and lets it communicate with almost any computer and modem. Users can electronically search databases, join ongoing real-time discussions and swap programs and files. Several communications protocols are supported, including standard Binary II and extended Xmodem.
$129 retail
Pinpoint Publishing; 5865 Doyle St., Ste. 112; Emeryville, CA 94608; 415-654-3050

ProTerm

Telecommunications
Apple IIGS; other Apple II models; 128K.

ProTerm is a telecommunications package that features a Scrollback buffer that captures all text as it crosses the screen, allowing a user to scroll forward and backward through data for editing, printing or saving to disk.

Other features include automatic macro generation for log-on to remote databases, support for larger memory cards and sophisticated data transfer capabilities. Version 2.0 also includes a text editor, full VT-100 emulation and procedure files that can be called from ProTerm macros.
$95 retail
Checkmate Technology, Inc.; 509 S. Rockford Dr.; Tempe, AZ 85281; 800-325-7347 or 602-966-5802

Teleworks Plus

Communications
Apple IIGS; 512K.

Teleworks Plus is made specifically for the Apple IIGS. It allows the user to connect to on-line services such as The Source and Compuserve, send and receive art and files, search information services and take part in on-line conversations.

The program uses the IIGS interface, allowing the use of pull-down menus and pointing and clicking of the mouse. It also contains macro keys that automate sequences of frequently-used keystrokes and save time re-entering the same information. Availability is scheduled for summer, 1988.
$99.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Desktop Publishing

Font Disks 1 And 2

Add-on printer fonts
Apple IIGS; other Apple II models; 64K.

Font Disks 1 and 2 give downloadable characters to Apple IIGS users. Each disk provides 15 character sets for use with Print-Quick's Quick-Font utility, and includes two high-resolution screens of frequently used sign phrases for use with Print-Quick's Quick-Dumper utility.

Font Disk 1 includes a disk head cleaner that automates the head cleaning process and works with any disk head cleaning diskette. Font Disk 2 includes a mouse, joystick and paddle tester for verifying correct operation of control devices.
$19.95 retail; Font Disk 1
$19.95 retail; Font Disk 2
Third Wave Technology, Inc.; 11934 Lorain Ave.; Cleveland, OH 44111; 216-671-8991

Font Library For The Apple IIGS

Font utility program
Apple IIGS; 512K.

Font Library For The Apple IIGS is a collection of 90 font files in 40 different font families. It offers users a variety of decorative fonts, a border font, a keyboard font and a multicolor font, as well as near-letter quality type styles.

Font Library fonts are compatible with all Apple IIGS-specific software, including Multi-scribe GS, Top Draw, PaintWorks Plus and DeluxePaint II.
$39.95 retail
StyleWare, Inc.; 5250 Gulfton, Ste. 2E; Houston, TX 77081; 713-668-1360

MagnaCharta

Presentation graphics program
Apple IIGS; other Apple II models; 128K.

MagnaCharta is a data charting program that allows users to create various types of graphs or charts. It features a Macintosh-like pull down menu interface.

The program allows users to select the width and spacing of graphing bars, the location of the legend and chart title and the borders around the legend, chart or screen. All titles and labels may be individually turned on and off. Autoscaling and normalizing of tightly clustered data is also provided.

MagnaCharta's printing routines support over 60 different model printers and over 40 interface cards, including exclusive precision two-pass color printing on the ImageWriter II. The program is not copy protected.
$59.95 retail
Third Wave Technology, Inc.; 11934 Lorain Ave.; Cleveland, OH 44111; 216-671-8991

Medley

Integrated desktop publishing
Apple IIGS; 1 MB; color monitor recommended.

Medley is an integrated desktop publishing program created specifically for the Apple IIGS. It

combines complete word processing, artwork and page layout capabilities into a single program.

Features include: complete word processor, with justify, hyphenation, change of fonts, etc.; complete color artwork functions, including ability to modify clip art pictures; complete page layout capability, including multiple columns; an 80,000-word spelling checker; a thesaurus; movement from text to art functions and back; and a 500-picture clip art library.
$195 retail
Milliken Publishing Co.; 1100 Research Blvd.; PO Box 21579; St. Louis , MO 63132-0579; 314-991-4220 or 800-643-0008

Personal Newsletter

Graphics and page composition
Apple IIGS; other Apple II models.

Personal Newsletter provides integration of text, graphics and page composition. The program includes a wide selection of fonts and many type styles, including underline, boldface, italics, reverse, outline, shadow, fat and tall. Other features include word wrap, cut and paste, up to 10 columns, newspaper-style headlines, on-screen help and 30 fill patterns.

The program also imports files from The Print Shop, Dazzledraw and other programs, including double high-resolution graphics. In addition, Personal Newsletter includes a library of clip art and imports ASCII files from any word processor.
$59.95 retail
Softsync, Inc.; 162 Madison Ave.; New York, NY 10016; 212-685-2080

Print-Quick

Five printer support programs
Apple IIGS; other Apple II models; 64K.

Print-Quick provides five printer support programs that can be used with word processors, databases and spreadsheets. Quick-Setup allows a user to download custom character fonts to use with AppleWorks or other word processors that use standard text files. Quick-Typer turns an Apple printer into a powerful line editing typewriter that can imbed print features within a line. Quick-Font provides four downloadable character sets. Quick-Dumper lets a user know the size of a picture before it is printed. Text file utilities allow a user to print text files or display them on screen with all hidden command characters revealed.
$49.95 retail
Third Wave Technology, Inc.; 11934 Lorain Ave.; Cleveland, OH 44111; 216-671-8991

Printrix 1.1

Font printing package
Apple IIGS; 128K; printer.

Printrix is a font printing package that includes a large selection of fonts. It enhances the print quality of many dot-matrix printers, including the ImageWriter and Epson FX series printers and allows direct printing of text files from AppleWorks, AppleWriter, WordPerfect and Word Juggler.

The software also merges text and graphics together, includes boldface and italic lettering, prints in color, allows onscreen preview and more.
$65 retail
Data Transforms, Inc.; 616 Washington St.; Denver, CO 80203; 303-832-1501

Springboard Publisher

Publishing program
Apple IIGS; other Apple II models.

Springboard Publisher is a desktop publishing package designed for those who create and publish pages in the home, school and business. Pages can be preformatted or the user can work free-form. All of the tools are available on screen and are accessed through pull-down menus.

Page-layout features include "intuitive text" that automatically flows around graphics; direct import of AppleWorks files; multiple-column, variable-width column pages; automatic borders to separate sections of the page; and the capacity to insert and overlap both text and graphics.

The program includes a full-featured word processor, graphics tools, and can print using dot matrix printers or laser printers using the optional Laser Driver product.
$139.95 retail; Springboard Publisher
$39.95 retail; Laser Driver
$29.95 retail; Style Sheets
Springboard Software, Inc.; 7808 Creekridge Cir.; Minneapolis, MN 55435; 612-944-3915

The Print Shop Graphics Library Sampler Edition

Clip art for The Print Shop
Apple IIGS; The Print Shop IIGS; 512K.

The Print Shop Graphics Library Sampler Edition is a collection of 190 professionally-designed graphic elements that introduce users to artistic excellence. The disk includes full-color graphics that can be used all year along with The Print Shop IIGS, including art for holidays, birthdays, weddings, anniversaries and special occasions.
$34.95 retail
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903-2101; 800-527-6263

The Print Shop IIGS

Personal publishing
Apple IIGS; 512K; printer.

The Print Shop has been redesigned to take advantage of the power, color and resolution of the Apple IIGS. The IIGS version can be used to create personalized greeting cards, stationery and banners (either vertically or horizontally) and prints out creations in up to 10 colors.

A wide range of type styles and sizes and dozens of multicolored graphics, borders and backgrounds are available. Graphics are supplied in small, medium and large sizes, and users can put two graphics on the same page. A graphics editor for editing multicolor graphics is also included, along with full on-screen Preview and Save features.
$59.95 retail
Broderbund Software, Inc.; 17 Paul Dr.; San Rafael, CA 94903-2101; 800-527-6263

Education

Calendar Crafter

Creates customized calendars
Apple IIGS; 512K; printer.

Calendar Crafter is a utility that allows teachers to create and print customized calendars for a week, month or year. Event information can be added to appropriate dates. Designed to work specifically with the Apple IIGS, Calendar Crafter includes the ability to store holidays, birthdays and other events using up to 10 categories and 100 events per category.
$59 retail
Minnesota Educational Computing Corp. (MECC); 3490 Lexington Ave. N.; St. Paul, MN 55126-8097; 612-481-3500

Computer Mad Libs

Entertainment word game
Apple IIGS; 768K.

Computer Mad Libs is an electronic version of the party game people have been playing for years. The program's stories use the vendor's SmoothTalker speech technology to let players hear their stories with humorous results.

This strategic word game is appropriate for all ages and provides pure entertainment illustrated with cartoons. Mad Libs Titles, Mystery Mad Libs and Mad Libs Library are the main menu choices so far available.
$19.95 retail
First Byte; 3333 E. Spring St., Ste. 302; Long Beach, CA 90806; 213-595-7006 or distributed by Electronic Arts

Coordinate Math

Graphing
Apple IIGS; other Apple II models; 128K.

Coordinate Math provides students in grades 4 through 12 with practice at locating points in a Cartesian coordinate system. Three game programs challenge students to solve problems using their skill at finding points on a grid.

The computer randomly generates problems, provides immediate feedback and supports colorful graphics. It allows teachers to modify the programs easily to suit their lesson plans or students' needs.
$59 retail
Minnesota Educational Computing Corp. (MECC); 3490 Lexington Ave. N.; St. Paul, MN 55126-8097; 612-481-3500

CSL Marks

Software for teachers
Apple IIGS.

CSL Marks is a fast, easy program that allows teachers to produce reports. It handles the production of report cards and keeps complete academic progress records. Among the areas tracked are standard comments from teachers regarding students, grading scale with up to 41 user-defined

letters or numeric grades, sorts by student name or I.D., and production of Individual Student Reports, Class Lists, Spreadsheet Reports and more.
$75 retail; individual teacher license
$250 retail; school site license
Chancery Software, Ltd.; 500-1168 Hamilton St.; Vancouver, BC, Canada V6B 2S2; 604-685-2041

Elfe

Grammar for French students
Apple IIGS; 512K.

Elfe is a set of exercises designed to give students practice on the basic grammar points of the French language. It includes 800 exercises grouped according to verb forms, functions words and sentence patterns. The exercises include material typically presented in elementary and intermediate French classes. Each exercise contains between five and 35 items so that students have ample opportunity to master each grammar form. The software is available in modules or a complete set.
$480 retail; complete set
Conduit; The University of Iowa; Oakdale Campus; Iowa City, IA 52242; 319-335-4100

Equation Math

Plotting algebraic equations
Apple IIGS; other Apple II models; 128K.

Equation Math provides students with an accurate, easy-to-use tool for investigating and plotting algebraic equations. Three programs allow students to plot linear, quadratic or trigonometric equations of their choice.

Students are able to zoom in or out on the graphed equation. They can specify graphing parameters, such as range and domain, and plot up to four equations on the same graph. The programs are designed for grades 9 through 12.
$59 retail
Minnesota Educational Computing Corp. (MECC); 3490 Lexington Ave. N.; St. Paul, MN 55126-8097; 612-481-3500

First Letters And Words

Alphabet learning program
Apple IIGS; 768K.

First Letters and Words introduces children 3 to 6 to the alphabet through a talking narrator named Ted E. Bear. First Letters and Words is the second title in First Byte's Building Blocks for Learning series.

The program is an early education skill builder in letter formation and building letters into words. It incorporates synthesized speech to aid children in learning reading readiness skills.
$49.95 retail
First Byte; 3333 E. Spring St., Ste. 302; Long Beach, CA 90806; 213-595-7006 or distributed by Electronic Arts

First Shapes

Basic shapes recognition program
Apple IIGS; 768K.

First Shapes is an elementary program on geometric shapes for children ages 3 to 8. It introduces young learners to the world of geometric shapes and sizes through a talking character named Ted E. Bear.

The program helps children increase their understanding and interest in mathematics and boosts their confidence in problem-solving and independent decision making.
$49.95 retail
First Byte; 3333 E. Spring St., Ste. 302; Long Beach, CA 90806; 213-595-7006 or distributed by Electronic Arts

Fraction Practice Unlimited

Develop fraction skills
Apple IIGS; 128K.

Fraction Practice Unlimited helps students in grades 4 through 6 develop more advanced fraction skills. Four menu options enable students to classify fractions by type or size, reduce fractions to their lowest common denominators, order fractions by size and find the missing numerator or denominator in equivalent pairs.
$59 retail
Minnesota Educational Computing Corp. (MECC); 3490 Lexington Ave. N.; St. Paul, MN 55126-8097; 612-481-3500

Fractions Concepts, Inc.

Introduction to fractions
Apple IIGS; other Apple II models; 128K.

Fraction Concepts, Inc. introduces students to such basic fraction skills as distinguishing the numerator and the denominator, recognizing different types of fractional numbers and recognizing simple equalities. An animated factor setting provides a highly motivating theme and a structure for the drills that take place in the course of using the programs. The program is designed for grades 4 through 6.
$59 retail
Minnesota Educational Computing Corp. (MECC); 3490 Lexington Ave. N.; St. Paul, MN 55126-8097; 612-481-3500

Homework Helper-Math Word Problems

Math program
Apple IIGS.

This program teaches students a step-by-step method of solving many types of math word problems. Geared for grades 7 through 12, it shows how the key to solving math word problems is in building a proper equation with the provided information.

The program includes a tutorial section with a complete range of problems in terms of type and level of difficulty, includes help screens that explain prompts and questions in greater detail and provides calculator and word processor modules.
$49.95 retail
Spinnaker Software Corp.; 1 Kendall Sq.; Cambridge, MA 02139; 617-494-1200

Homework Helper-Writing

Term paper program
Apple IIGS.

Homework Helper-Writing guides students through the three fundamental steps in writing a paper: formulating ideas about the topic, organizing those ideas into an outline and writing the actual text. The program is designed to address book reports and essays, the most common writing assignments for students in grades 7 to 12.
$49.95 retail
Spinnaker Software Corp.; 1 Kendall Sq.; Cambridge, MA 02139; 617-494-1200

Homeworker

Secondary education program
Apple IIGS; other Apple II models.

Homeworker is a productivity tool for secondary and college students that is designed to provide the tools necessary to earn good grades. The program provides six integrated modules: Work Processor, Outliner, Flash Card Maker, Grade Keeper, Calendar and Calculator with conversion tables.

Homeworker features on-screen tutorials, special multiple-learning activity data files and a clipboard for easy transfer of material from one module to another.
$89.95 retail; Home Edition
$249.95 retail; Classroom Edition with 10 disks
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-4070

Information Laboratory Software: Earth Science

Research database
Apple IIGS; 512K.

Information Laboratory Software: Earth Science is designed for students in grades 6 to 9. The research databases contain more than 600 data cards and illustrations following earth science themes. Among subjects covered are conservation, earth geologic history, oceans, plate tectonics, solar systems and more.

The program uses a Macintosh-like interface and pull down menus. Students work their way through menus and become familiar with interesting earth science facts.
$72.00 retail
Addison-Wesley Publishing Co., Inc.-Electronic Publishing; 2725 Sand Hill Rd.; Menlo Park, CA 94025; 800-227-1936 or 415-854-0300

Information Laboratory Software: Life Science

Database on disk
Apple IIGS; 512K; color monitor.

Information Laboratory Software: Life Science is a research database for students in grades 6 to 9. The database contains more than 600 data cards and illustrations following life science themes. Among subjects covered are animal kingdom, biographies of scientists, ecology, health and more.

The program uses a Macintosh-like interface and pull-down menus. Students work their way through menus and become familiar with interesting life science facts.
$72 retail; school
$96 retail; consumer
Addison-Wesley Publishing Co., Inc.-Electronic Publishing; 2725 Sand Hill Rd.; Menlo Park, CA 94025; 800-227-1936 or 415-854-0300

KidsTime II
Creative software
Apple IIGS; 512K; color monitor.
KidsTime II contains two educational programs designed for children ages 3 to 10: ABkey and KidsNotes.

ABkey is a letter-recognition/keyboard skill program that contains different levels of difficulty. The simplest level involves identifying an uppercase letter on screen and pressing the corresponding key on the keyboard. A more difficult level involves identifying lowercase letters.

KidsNotes is an introductory music program that allows a child to explore the many aspects of music. An assortment of simple melodies, familiar to young children, is included on the disk.
$39.95 retail
Great Wave Software; 5353 Scotts Valley Dr.; Scotts Valley, CA 95066; 408-438-1990

KidTalk
Talking notebook
Apple IIGS; 768K.
KidTalk increases a child's ability to read, write and communicate ideas. It creates an environment in which a child can write, hear and read stories, reports, plays, poems and secret messages.

KidTalk provides word-oriented pull-down menus for older children along with standard file, edit and print commands. For younger children, it offers picture-oriented menus with speech capability that allows a child to hear an entire story or have each letter, word or sentence spoken as it is entered into the computer.
$49.95 retail
First Byte; 3333 E. Spring St., Ste. 302; Long Beach, CA 90806; 213-595-7006 or distributed by Electronic Arts

Math And Me
Math by motivation
Apple IIGS; other Apple II models.
Math And Me is designed to build early math skills with 12 motivating learning games in four areas of math: Shapes, Numbers, Patterns and Single-Digit Addition. The program has been developed for children ages 3 to 6.

Math and Me motivates and rewards children with sound and animation as they learn. A graphic certificate may be printed each time an activity is successfully completed. The certificate is designed so that children may color and display it.

With the vendor's Early Learner Interface, children have the option of using a mouse or the keyboard to select icons and answers.
$39.95 retail
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-4070

Math Blaster Plus
Mastering math skills
Apple IIGS; other Apple II models.
Math Blaster Plus, designed for students in grades 1 through 6, covers the fundamental skills of mathematics: addition and subtraction, multiplication and division, and fractions, decimals and percents. The program uses color graphics on the Apple IIGS, sound effects and five learning activities to build motivation and skills.

The program includes over 750 basic math facts. Learning activities include Countdown, Ignition, Lift-off, Orbit and the Blasternaut Game, where students direct an animated character while reviewing basic math facts. New features in the latest version cover student record keeping, printed graphics, a test maker, drill-and practice sessions, pull-down menus and more.
$49.95 retail
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-4070

MathTalk
Talking notebook
Apple IIGS; 768K.
MathTalk is designed to help children solve math problems, learn to complete assignments on time, prepare for tests, learn calculator skills and master basic mathematical facts.

The program allows children to enter their own math problems and receive individualized graphic and spoken help specific to each problem.

In addition, MathTalk introduces a talking helper who provides each child with his own private tutor. This character helps a child work through the program's tutorials, simulations and games.
$49.95 retail
First Byte; 3333 E. Spring St., Ste. 302; Long Beach, CA 90806; 213-595-7006 or distributed by Electronic Arts

MathTalk Fractions
Talking notebook
Apple IIGS; 768K.
MathTalk Fractions features Professor Matt A. Matics matching wits with his students as he guides them through this talking notebook of decimals, fractions and percents. Students enter their own problems, plus play a variety of games, as they test their skill at math while getting their homework done.
$49.95 retail
First Byte; 3333 E. Spring St., Ste. 302; Long Beach, CA 90806; 213-595-7006 or distributed by Electronic Arts

Mavis Beacon Teaches Typing!
Expert typing teacher
Apple IIGS; 512K.
Mavis Beacon Teaches Typing uses artificial intelligence to help users build their typing skills. User progress is checked in each lesson as the program tailors a typing course to individual needs. Mistakes are explained in conversational sentences, helping to make learning interesting and fun.

The program includes 3D graphics, a "guide hands" graph for perfecting typing technique, over 20 color graphics displays of user progress, Dvorak or standard keyboard lessons, joystick or mouse control, and more.
$44.95 retail
The Software Toolworks; One Toolworks Plaza; 13557 Ventura Blvd.; Sherman Oaks, CA 91423; 818-907-6789

Money Works
Money recognition and counting
Apple IIGS; other Apple II models; 128K.
Money Works provides students with opportunities to practice their skills at recognizing money, counting money and making change. Students also learn about concepts such as minting money, other monetary systems and international exchange rates. It is designed for grade levels 1 through 4.
$59 retail
Minnesota Educational Computing Corp. (MECC); 3490 Lexington Ave. N.; St. Paul, MN 55126-8097; 612-481-3500

Numeric Concept And Memory Skills
Evaluate numeric and memory skills
Apple IIGS; other Apple II models.
Numeric Concepts And Memory Skills software is comprised of seven programs designed to train and evaluate a variety of numeric and memory skills. The programs may be used with individuals (age six to adult) who have head injuries and learning disabilities.
$395 retail; includes seven programs
Network Services; 1915 Huguenot Rd.; Richmond, VA 23235; 804-379-2253

Read 'N Roll
Reading comprehension program
Apple IIGS; other Apple II models.
Read 'N Roll helps students in grades 3 through 6 improve overall reading comprehension in five main skill areas. The five reading activities include 320 high-interest reading passages and 320 vocabulary words. An optional timing feature allows students to work at their own speed or build to a faster pace. A printed Certificate of Excellence rewards outstanding scores.

The five reading areas include: Main Idea, where students practice reading important passages; Sequences, where story sequences are identified; Inferences, where students analyze passages and make inferences; a Vocabulary Building Bowling Game; and an easy-to-use Editor.
$49.95 retail
Davidson & Associates, Inc.; 3135 Kashiwa St.; Torrance, CA 90505; 213-534-4070

Reader Rabbit
Talking early education program
Apple IIGS; 256K; color monitor recommended.

Reader Rabbit uses the speech capabilities of the Apple IIGS to reinforce the learning process in children ages 4 to 7, particularly reading, spelling and vocabulary skills.

An animated Reader Rabbit and lively music help to reward correct solutions. Special exercises develop and test concentration and memory. Multiple options also allow parents and teachers to customize the program to individual reading levels. The program includes a vocabulary of over 200 three-letter words.

The IIGS version of Reader Rabbit supports the 16-color graphics of the IIGS and does not require additional sound hardware. It uses digitized speech, a more natural-sounding speech than synthesized speech.
$59.95 retail; home edition
$79.95; retail; school edition
$39.95 retail; home edition without speech
The Learning Co.; 6493 Kaiser Dr.; Fremont, CA 94555; 415-792-2101

Sky Travel
Astronomy program
Apple IIGS; 256K.

Sky Travel is an astronomy program with enough power for the expert and on-line help for the novice. It features a stellar database that shows the location of more than 1,200 stars, 88 constellations, the earth's solar system, more than 300 deep-sky objects and a 10,000 year viewing span from anywhere on the earth. According to the vendor, the program will be available in May, 1988.
$49.95 retail
MicroIllusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715

SpaceLace
An interactive kaleidoscope
Apple IIGS; other Apple II models.

SpaceLace turns the Apple IIGS into a fascinating visual display that's educational as well as pleasing to the eye. The program creates various kaleidoscope patterns that perform in intricate symmetries, changing color or patterns with a keystroke.

The program includes two levels of tutorials for assistance in creating symmetries. The first is for novices at programming. The second teaches programming in Applesoft BASIC as well as how to create exciting shapes.
$29.95 retail
Great Wave Software; 5353 Scotts Valley Dr.; Scotts Valley, CA 95066; 408-438-1990

Speller Bee
Talking notebook
Apple IIGS; 768K.

Speller Bee incorporates speech capability and graphics for the purpose of improving a child's spelling skills. Designed for ages 5 to 13, Speller Bee allows a child not only to see his own spelling words, but to hear them spoken as well.

Children are able to create 32 of their own spelling lists, with each list containing 10 words up to 15 letters in length. Speller Bee contains 150 prestored spelling words, each at a different level of difficulty.
$49.95 retail
First Byte; 3333 E. Spring St., Ste. 302; Long Beach, CA 90806; 213-595-7006 or distributed by Electronic Arts

Stickybear Math
Basic addition and subtraction
Apple IIGS; other Apple II models.

Stickybear Math provides drill and practice in basic addition and subtraction for children ages 6 to 9. Adding and subtracting becomes fun; each correct answer helps Stickybear in a series of animated adventures. The program contains 20 levels of problems, including single to four-digit problems in horizontal and vertical addition and subtraction.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 800-327-1473 or 203-542-5553

Stickybear Math 2
Basic multiplication and division.
Apple IIGS; other Apple II models.

Stickybear Math 2 provides drill and practice in multiplication and division for ages 7 and up. Thirty-seven levels of problems include dividing and multiplying single digit numbers, multiplying three digit numbers and dividing by two digits to get a three-digit answer. Bright on-screen animations are rewarding for young children as they answer correctly.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 800-327-1473 or 203-542-5553

Stickybear Numbers
Counting and number recognition program
Apple IIGS; other Apple II models.

Stickybear Numbers presents quality graphics and animation to reinforce number and counting skills for children ages 3 to 6. Each time a child presses a number on the keyboard, a new set of big, colorful objects appears on the screen with the corresponding numeral. Or, children can learn to count up and down by using the space bar.

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Reader Circle Number 10

A parent-teacher guide provides instruction as well as ideas for additional activities.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 800-327-1473 or 203-542-5553

Stickybear Reading
Builds word and reading skills
Apple IIGS; other Apple II models.
Stickybear Reading includes three activities on disk to help children learning reading skills: Match The Word; Find The Word; and Build A Sentence. The activities allow children to create their own animated sentence-stories on screen. The program is designed for ages 5 to 8.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 800-327-1473 or 203-542-5553

Stickybear Reading Comprehension
Versatile reading program
Apple IIGS; other Apple II models.
Stickybear Reading Comprehension is a multi-level reading program designed to improve reading comprehension skills for children ages 7 to 9. The program contains 30 stories that help students learn reading skills, among them recognizing main ideas and sequence, finding details, using context to identify words, recognizing cause and effect and more. The program may be customized and new stories and questions added at any time.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 800-327-1473 or 203-542-5553

Stickybear Spellgrabber
Builds spelling and vocabulary skills
Apple IIGS; other Apple II models.
Stickybear Spellgrabber captures the interest of beginning spellers with three activities. In Picture Spell, children move Stickybear through a maze of shelves to pick up the correct letters illustrated by a picture at the top of the screen. Word Spell requires children to unscramble letters to spell and reconstruct words. In Bear Dunk, similar to the hangman game, one or two players try to guess words, letter by letter, before Stickybear gets dunked in a tank of water. The program is designed for ages 6 through 9.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 800-327-1473 or 203-542-5553

Stickybear Typing
Typing instruction for all ages
Apple IIGS; other Apple II models.
Stickybear Typing sharpens skills for typewriter and computer keyboard mastery with three separate activities. Stickybear Keypress, for young players and beginners, allows practice in either typewriter or word processor mode. Stickybear Thump builds typing skills in a fast-action activity. Stickybear Stories presents typing practice with entertaining text in a choice of categories. The program tracks progress and keeps records for up to 25 users.
$39.95 retail
Weekly Reader Software From Optimum Resource, Inc.; 10 Station Pl.; Norfolk, CT 06058; 800-327-1473 or 203-542-5553

Talking Text Writer
Speech word processor
Apple IIGS; 512K.
Talking Text Writer is a software package that combines word processing with the Echo board, a speech synthesizer from Street Electronics. Children can hear aloud any letters, words, sentences, stories or other text they type.
The program is designed as a literacy tool for use by students in prekindergarten through sixth grade, for gifted and bilingual children and for students with communication disorders or in remedial reading programs.
Students can see the text and control how they want it to look by changing screen colors, margins and text size.
$199.95 retail; to educators (includes Echo board)
$149.95 retail; to educators (without Echo board)
$249.95 retail; home version (includes Echo board)
Scholastic, Inc.; 730 Broadway; New York, NY 10003; 212-505-3000

To Preserve, Protect And Defend
A U.S. Constitution lesson
Apple IIGS; other Apple II models; 128K.
To Preserve, Protect and Defend is an educational computer game based on key issues and persons that affected the creation of the U.S. Constitution in 1787. Students play the role of a guard assigned to protect the Constitution before it is to be signed at the Constitutional Convention. Students perform their guard duties in the State House in Philadelphia.
$59 retail
Minnesota Educational Computing Corp. (MECC); 3490 Lexington Ave. N.; St. Paul, MN 55126-8097; 612-481-3500

Typing Tutor IV
Keyboard instruction
Apple IIGS; color monitor recommended.
Typing Tutor IV is a typing program that automatically adjusts to a user's abilities and progress. It shows a user his speed, accuracy, strengths and weaknesses and graphs progress along the way. The program can also be used to create customized typing lessons.
$49.95 retail
Simon and Schuster Software; 1 Gulf & Western Plaza; New York, NY 10023; 800-624-0023 or 800-624-0024 in NJ

Zoyon Patrol
Learning the scientific method
Apple IIGS; other Apple II models.
Zoyon Patrol is a game-like simulation that provides an environment for learning the problem-solving strategies in the scientific method. A student or group of students assumes the role of a director of a city agency responsible for locating and capturing zoyons — an imaginary order of animals that is an endangered species. Players use the tools and information at their disposal to find the animals.
$59 retail
Minnesota Educational Computing Corp. (MECC); 3490 Lexington Ave. N.; St. Paul, MN 55126-8097; 612-481-3500

Entertainment

4th & Inches
Football simulation
Apple IIGS; 512K; joystick or mouse.
4th & Inches features 20 plays and 11 different formations, incorporating 22 players, a full width and length field and realistic game play. A built-in feature reduces each player's energy level according to the number and type of plays. Two primary screens are available during play: the field showing the play action and the coaches' statistical screen detailing players' height, weight, performance and more. According to the vendor, the game will be released in June, 1988.
$44.95 retail
Accolade; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Alien Mind
Arcade space adventure
Apple IIGS; 512K; RGB monitor; SuperSonic stereo card recommended.
Alien Mind brings players into the 21st century, where they have been asked to be part of a biological research team studying two unhatched eggs of an unknown species. They arrive at the station only to find the doors locked behind them and no visible signs of human life.
$54.95 retail
PBI Software, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-349-8765

Beyond Zork
Adventure into the Great Underground Empire
Apple IIGS; 512K.
Beyond Zork, part three of the Zork Trilogy, includes more extensive player involvement than any of its predecessors. Since the last release of Zork, the wizards have mysteriously disappeared and with them the magic that held civil order together. It is the player's mission to reach the underground lair where monsters guard the fabulous treasure.
$44.95 retail
Infocom, Inc.; 125 Cambridge Park Dr.; Cambridge, MA 02140; 617-492-6000

Black Jack Academy
Card game on disk
Apple IIGS; 256K.
Black Jack Academy teaches a user how to play blackjack or helps a user brush up on his game. On-line help is available to explain play

options. Features include multiple play speeds, card counting option, player card total option and a money management guide.
$39.95 retail
MicroIllusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715

Bridge Baron II
Play bridge with the Apple
Apple IIGS; other Apple II models.
Bridge Baron II plays the complete game of bridge with a player in over one million random deals. A player bids and plays the South cards, while the Bridge Baron bids and plays the West, North and East cards as required.
The program features standard five-card major opening bids; strong or weak two-bids; takeout, penalty and balancing doubles; and more.
$49.95 retail
Great Game Products; 8804 Chalon Dr.; Bethesda, MD 20817; 301-365-3297 or 800-426-3748

Bubble Ghost
Arcade action
Apple IIGS; 256K.
The Bubble Ghost is a phantom destined to travel the halls of an eerie castle, forever blowing bubbles. The only way to put his wandering soul to rest is to help him blow his fragile bubble through 35 trap-laden rooms in a macabre mansion, without popping it. Many rooms in the multilevel mansion hold secrets that can keep you from "blowing it." According to the vendor, Bubble Ghost will be available in June, 1988.
$44.95 retail
Accolade; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

California Games
A game of skill
Apple IIGS; 512K.
California Games is a challenging game of skill. The players will find themselves going through the Golden state with events like Surfing, Half Pipe Skateboarding, Roller Skating and more. The players have the opportunity to win prizes from the on-screen sponsors — names like Kawasaki, Casio and Ocean Pacific.
$39.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

Cavern Cobra
Action arcade game
Apple IIGS.
Cavern Cobra is a fast-action arcade game with digitized sounds which will play back in stereo when used with the MDIdeas' SuperSonic Stereo Card. The mission for Cavern Cobra is to enter a terrorist stronghold consisting of over seven cavern levels, destroy that stronghold and ultimately kill the world's most dangerous terrorist.
$49.95 retail
PBI Software, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-349-8765

Destroyer
You are in command
Apple IIGS; 512K.
Destroyer is a cross between an action game and simulation. The user is in control of a Navy destroyer and can command and oversee all of the operations. The game includes several missions, such as hunting for subs, rescuing a downed pilot, or guiding a convoy into a port.
$39.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

Dondra: A New Beginning. . .
A graphics quest for the Apple IIGS
Apple IIGS.
In the first of the Questmaster Series, the player is Terba, last of the Tellasien race. The adventure begins in the futuristic world of Dondra, where a journey begins to find the Crystal Prism of Heheutotol. Only this ancient piece of the master staff will help in the battle to rid the universe of the evil Colnar. The imagination runs wild in this land filled with mythical characters, "cartoon style" graphics and detailed animation sequences.
$49.95 retail
Spectrum Holobyte; A Division of Sphere, Inc.; 2601 Challenger Dr.; Alameda, CA 94501; 415-522-3584

Dream Zone
Graphics game
Apple IIGS; 512K.
Dream Zone is a graphic adventure game designed specifically for the Apple IIGS. The program takes advantage of the IIGS color graphics and animation. Stereo sound is also featured.
The adventure casts the player as prisoner of his or her own dreams, traveling to exotic locales and meeting multitudes of unique characters and creatures, all in an effort to escape the Dream Zone.
$49.95 retail
Baudville, Inc.; 5380 52nd Street SE; Grand Rapids, MI 49508; 616-698-0888

Famous Course Volume II
Golf simulation
Apple IIGS; 512K; Mean 18.
Famous Course Volume II gives a player more world-class golf course challenges for the Mean 18 player. Volume II contains three world-class courses to be conquered: Inverness Club, Ohio; Turnberry, Scotland; and Harbour Town, South Carolina.
$19.95 retail
Accolade; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Famous Course Volume III & IV
Golf simulation
Apple IIGS; 512K; keyboard or mouse; Mean 18.
The 1987 PGA tour challenges the Mean 18 player. Volume III contains the Olympic Club, San Francisco; Las Colinas, Texas; and Muirfield, Scotland. Volume IV contains Doral, Florida; Castle Pines, Colorado; and Kapalua, Hawaii.
$34.95 retail
Accolade; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Fire Power
Arcade game
Apple IIGS; 512K.
Fire Power is an action-packed arcade tank battle game that features continuous shooting excitement. A split screen yields player vs. player, player vs. computer or player vs. modem player. According to the vendor, the program will be available in May, 1988.
$24.95 retail
MicroIllusions; 17408 Chatsworth St.; Grenada Hills, CA 91344; 818-360-3715

GBA Championship Basketball
Basketball simulation
Apple IIGS.
GBA Championship Basketball combines arcade game action with basketball strategy. This Apple IIGS version of the original Activision classic allows one or two players to practice inside and outside shooting, dribbling, ball stealing, quickness and jumping ability.
$44.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Hacker II: The Doomsday Papers
Strategic adventure
Apple IIGS.
The United States government discovers a diabolic plot to destroy the world. Players of Hacker II: The Doomsday Papers are asked to help collect details on the project, known only as "The Doomsday Papers."
Players are provided with a top secret operations document, called the MSFM Operational Manual, that gives secret intelligence-gathering procedures to help complete a mission.
$19.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Hardball!
Baseball simulator
Apple IIGS; 512K; color monitor.
Hardball! features three-dimensional field perspectives in baseball, including center field pitcher/batter view, behind-the-plate view of right field and behind-the-plate view of left field. Up to six different pitches — fast balls, sliders, curve balls, screwballs, change-ups and sinkers — may be thrown by either a right or left-handed pitcher.
Throughout the game, manager decisions such as intentional walks, substitutions, bunts, base stealing and in-field/out-field positioning can be made.
$44.95 retail
Accolade; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

King's Quest I
3-D animation
Apple IIGS; 512K.

King's Quest I allows players to use keyboard controls or optional joystick to move animated characters around in up to 100 3-D color scenes. The adventure features Sir Graham on his journey to find three magical items that will save the kingdom of Daventry. The player must outwit a wicked witch, climb a magic beanstalk, ride on the wings of an eagle and battle a fire-breathing dragon in his quest to win a crown and a kingdom.
$49.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-6858

Leisure Suit Larry
Nerd for the night
Apple IIGS; 512K.

Meet Larry, the star of Leisure Suite Larry In The Land Of The Lounge Lizards. Larry is the original blind date nightmare. He's also the unlikely "hero" of this three-dimension animated adventure game.

In this program, the user becomes the lovable nerd Larry for one fabulous night in "Lost Wages." He or she will plunge into the fast lane of reckless gambling, excessive inebriation and rampant whoopee. Not recommended for those under 18.
$39.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-6858

Marble Madness
A three-dimensional race
Apple IIGS.

Marble Madness is a IIGS version of the arcade game based on the famous coin-op classic from Atari Games Corp. This new version offers exciting game playing, the music and graphics of the original version and a new secret level. In the one player mode, using a joystick, the user rushes down treacherous raceways in an attempt to beat the clock to the goal. In a two player game, racers compete head to head trying to beat their opponent to the goal line.
$34.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Mean 18
Realistic golf simulator
Apple IIGS; 512K.

Mean 18 sets up for the player a round of 18 holes on three of the toughest golf courses in the U.S. The video golfer first chooses a course (beginner to expert levels are available), and then controls practice tees, putting on the green and playing a whole round of golf using the IIGS mouse. The game uses sharp, colorful graphics and sound, and even allows the user to "paint" a fairway by adding roughs and hazards.
$44.95 retail
Accolade; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Mini-Putt
Miniature golf simulation
Apple IIGS; 512K.

Mini-Putt, a one to four player game, offers a lighthearted approach to miniature golf with cartoon-style animation and wacky golf courses and holes. Each course represents a theme (famous movies, countries around the world, sport, etc.), and each hole depicts characteristics of that theme. According to the vendor, Mini-Putt will be available in June, 1988.
$44.95 retail
Accolade; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Monte Carlo
Games rich people play
Apple IIGS.

Monte Carlo brings casino excitement to the Apple IIGS. Games include blackjack, roulette, craps, baccarat, poker and trente-et-quarante.
$39.95 retail
PBI Software, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-349-8765

Pinball Wizard
Arcade pinball simulation
Apple IIGS; 256K.

Pinball Wizard is an action oriented arcade-style pinball simulation and building set. The game features detailed graphics, lights and sounds that provide the sensation of playing an actual arcade pinball. It is a one to four player game, featuring four different pinball simulations. Created pinball games may be saved to disk. According to the vendor, the program will be released in June, 1988.
$44.95 retail
Accolade; 550 S. Winchester Blvd., Ste. 200; San Jose, CA 95128; 408-296-8400

Play Bridge With Sheinwold
Test of skill
Apple IIGS; other Apple II models.

Play Bridge With Sheinwold allows users to play one or more hands of more than a million random deals. Users have from 1 to 5 tries to select the proper play. If they fail, the program makes the play and the deal continues. The analysis for each deal is presented in an accompanying book.
$29.95 retail
Great Game Products; 8804 Chalon Dr.; Bethesda, MD 20817; 301-365-3297 or 800-426-3748

Play Bridge With Truscott
Bridge game
Apple IIGS; other Apple II models; 64K.

Play Bridge With Truscott is a computer adaptation of "Winning Declarer Play," written by Dorothy Hayden Truscott. The program gives a user one to five chances to find the correct play in each of 158 deals chosen by the author. Each of the 158 deals is analyzed in Truscott's book, a copy of which is included with the program.
$29.95 retail
Great Game Products; 8804 Chalon Dr.; Bethesda, MD 20817; 301-365-3297 or 800-426-3748

Roadwar 2000
Futuristic war game
Apple IIGS; 512K.

In the year 2000, bacteriological warfare has ripped apart the fabric of American civilization. The user is the patriotic leader of a road gang which has been asked, by what is left of the federal government, to locate eight scientists, and to return them to a secret underground lab so they can develop a vaccine to neutralize the deadly microbes.
$44.95 retail
Strategic Simulations, Inc.; 1046 N. Rengstorff Ave.; Mountain View, CA 94043; 415-964-1353

Sea Strike
Save the tankers
Apple IIGS.

Sea Strike is a fast-action arcade game. The player's mission is to defend endangered oil tankers from attack. This arcade game uses digitized sound, super high-resolution graphics, pull-down menus, mouse control and high speed animation.
$39.95 retail
PBI Software, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-349-8765

Shanghai
Oriental strategy game
Apple IIGS.

Shanghai is derived from an ancient oriental game called Mah Jongg. The game consists of 144 tiles of seven visually different suits, which are stacked in a five-level, dragon-shaped pyramid.

To play the game, players must match and remove pairs of tiles until no additional moves can be made. As each pair of tiles is matched, they disappear, leaving in view any tiles hidden underneath. The play continues until all tiles are removed or until no additional moves can be made.
$44.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Silent Service
Submarine simulation
Apple IIGS; 256K; color monitor recommended.

The Apple IIGS' graphics, sound and speed enhance the realism of Silent Service, a submarine simulation game. Players captain a World War II submarine in the South Pacific through a wide selection of historical scenarios, ranging from single-ship attacks to patrol missions with heavily escorted convoys.

All of a submarine's critical battle stations are replicated: the conning tower, engine room and ship's bridge.
$39.95 retail
MicroProse Software, Inc.; 180 Lakefront Dr.; Hunt Valley, MD 21030; 301-771-1151

Space Quest
An animated adventure game
Apple IIGS; 512K.

Space Quest features three-dimensional graphics, digitized sound effects, advanced animation,

arcade sequences and a colorful, new windowing system that reveals player information quickly. Space Quest introduces Roger Wilco, sanitation engineer turned space-age swashbuckler. His mission is to search and destroy the super-secret star generator which has been stolen from his vessel, then initialize a new star for his paling planet.
$49.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-6858

Strategic Conquest II
Strategy war game
Apple IIGS.
Strategic Conquest II is a strategy war game that starts the player in an unknown world. The player then explores continents, develops forces and eventually confronts his mortal enemy, the computer. There are two billion different world maps and 15 levels of play.
$49.95 retail
PBI Software, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-349-8765

Sub Battle Simulator
Command a Navy sub
Apple IIGS; 512K.
Sub Battle Simulator allows the players to be in command of any one of six different classes of U.S. Navy submarines or German Kreigsmarine U-Boats during any selected year between 1939 and 1945.
$39.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

The Bard's Tale
Medieval adventure
Apple IIGS; 512K.
The Bard's Tale is an adventure story played and narrated in a way that takes advantage of the Apple IIGS' sound and graphics capabilities.
The game takes place in a country town called Skara Brae. The plot revolves around attempts to halt the evil spread by the wizard Mangar the Lionhearted, whose magic spell sealed off the town.
The Bard's Tale characters are created from 10 character professions and six status levels.
$49.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

The Tower of Myraglen
Adventure action game
Apple IIGS.
The Tower of Myraglen revolves around a dying world known as Myraglen. The few remaining knights of justice draw together in the once-great civilization, knowing that its only hope lies with them. Each knows well the world of Myraglen and of its devastation since the unholy war. Myraglen is infected with a disease that cannot be cured without another confrontation.
$54.95 retail
PBI Software, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-349-8765

Thexder
A computer action game
Apple IIGS; 512K.
Designed in Japan, Thexder offers music, animation and extended play value. Players are given the chance to pilot an armored robot through multiple attack scenarios. The battlefields include caves, vast cargo holds and spaceship interiors. Over 20 different kinds of aliens will do battle with the player and the challenge and music escalate as the game progresses.
$34.95 retail
Sierra On-Line, Inc.; PO Box 485; Coarsegold, CA 93614; 209-683-6858

War Or Peace? You Decide!
Decision-making in a nuclear age
Apple IIGS; other Apple II models.
War or Peace? You Decide! is a simulation of events that may lead up to or avert a nuclear war. The choice is up to the user. Through the use of six intricate scenarios, War or Peace educates participants in the complex and often clandestine processes that superpower countries engage in to survive in a world where life and death rests on the touch of a button.
Each scenario is supported by full-color graphics. The program is intended primarily for high school and college level students.
$64.95 retail
Bright Ideas, Inc.; 52 Exeter St.; Portland, ME 04102-2839; 207-775-1330

Winter Games
Enter the Olympics
Apple IIGS; 512K.
Winter Games is a compilation of eight events from the Winter Olympics. It includes bobsledding, downhill skiing, ice skating, ski jump and more. It can accommodate between one and eight players, who choose countries for which to compete. Players can compete in any or all of the events.
$39.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

World Games
Play the world
Apple IIGS; 512K.
In World Games, users participate in events that one normally identifies with particular countries. For example, Mexico has cliff diving, Japan offers sumo wrestling, Russia has weight liftin and the United States offers bull riding at rodeos. According to Epyx, this game takes full advantage of the graphics capabilities of the Apple IIGS.
$39.95 retail
Epyx, Inc.; 600 Galveston Dr.; PO Box 8020; Redwood City, CA 94063; 415-366-0606

World Tour Golf
Brush up on golf
Apple IIGS.
World Tour Golf is designed for computer golfers of all levels. The program contains a wide variety of classic courses, including Scotland's St. Andrews, Georgia's Augusta and the world famous Pebble Beach in California. The program can accommodate players who want to practice specific types of swings before venturing onto the course, and it comes with a construction set for designing tailored courses. Split screen animated graphics give both an overhead view and a golfer's eye view of the hole.
$39.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Hardware And Peripherals

Apple 3.5 Drive
The IIGS standard drive
Apple IIGS.
The Apple 3.5 Drive provides 800K of program and file storage for the Apple IIGS. This platinum-colored drive enables the Apple IIGS to run the majority of IIGS-specific programs, most of which are introduced on 3.5-inch media. The Apple 3.5 Drive can be daisychained with another Apple 3.5 Drive or with an Apple 5.25 Drive.
$399 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple 5.25 Drive
Runs earlier Apple II software
Apple IIGS.
The Apple 5.25 Drive enables the Apple IIGS to run most Apple II programs released on 5.25-inch disks. This platinum-colored unit provides 143K of program and file storage on a single disk.
$299 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple Hard Disk 20SC
Mass storage for data
Apple IIGS; Apple SCSI Card; System Cable.
The Apple Hard Disk 20SC provides 20 MB of storage for an Apple IIGS. It works in conjunction with the Apple II SCSI Card and Cable. The system's major features include: storage capacity equivalent to twenty five (25) 800K 3.5-inch disks; a high-performance SCSI parallel port, which can easily connect up to three devices on an Apple IIGS; and a platinum finish.
$1,299 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple MIDI Interface

Musical insturment digital interface (MIDI)
Apple IIGS; MIDI-equipped instrument; compatible software.

The Apple MIDI Interface for the Apple IIGS has one MIDI in-plug and one MIDI out-plug, making it suitable for a broad range of musical applications. It connects to one of the computer's two serial ports via Apple's standard circular eight connector. MIDI instruments are connected to the interface via two, five-pin standard MIDI cables.

The superior sound capabilities offered on the Apple IIGS computer along with the Apple MIDI Interface can make music education both in schools and at home more accessible and compelling. Teachers can use the Apple IIGS, Apple MIDI Interface, a MIDI-equipped instrument and compatible software to teach music skills including performance, theory and composition.
$99 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple II SCSI Interface Card; Revision C

Apple SCSI Interface
Apple IIGS; SCSI system cable.

The Apple II SCSI (small computer-system interface) Card provides compatibility with high-performance peripherals that use the SCSI standard, such as the Apple Hard Disk 20SC.

The card features high-performance parallel data transfers and the ability to connect up to four SCSI ProDOS 1.2-controlled peripherals with one card.

The Apple II SCSI Card, Revision C, is an enhanced version of the Apple II SCSI Interface Card. It is required when using a CD-ROM with an Apple II computer. The card is designed to provide better performance with the more sophisticated Apple II software and to increase the ability to handle different classes of SCSI peripheral devices.
$129 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple IIGS Memory Expansion Card

Extended memory board
Apple IIGS.

The Apple IIGS Memory Expansion Card adds as much as 1 MB of additional memory in 256K increments to an Apple IIGS. The card is compatible with most Apple II software that works with the Apple IIe Memory Expansion Card.
$129 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple IIGS System Fan

Temperature maintainer
Apple IIGS.

The Apple IIGS System Fan maintains the proper temperature in an Apple IIGS that has three or more expansion cards installed.
$49 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Apple IIGS Upgrade

Transformer kit
Apple IIe.

The Apple IIGS Upgrade gives the Apple IIe the advanced capabilities of an Apple IIGS. It is a dealer-installed option that involves replacing the logic board and metal base pan of an Apple IIe with a new Apple IIGS board. The Upgrade Kit's features include 256K of built-in memory, with RAM that is expandable to 8 MB. The basic system comes with 256K and can be increased in 256K increments.
$499 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

AppleCD SC

Optical storage device
Apple IIGS; Apple SCSI Card (Rev C).

AppleCD SC, is a compact, read-only memory drive that can store up to 270,000 pages of typewritten information, a large illustrated encyclopedia or several mail-order catalogs. It employs some of the same technologies found in home audio compact disc players. In addition to reproducing sound, it can "read" pre-recorded text, numbers and digitized images.

The AppleCD SC drive features a 64K memory buffer and SCSI that enable it to transfer data more quickly, and an audio chip set and desk accessory software that let it play audio CD tracks on CD-ROM as well as commercial audio compact discs. The drive includes a headphone jack, two RCA audio jacks for external speakers and amplifiers and a universal power supply that makes it compatible with electrical standards around the world.
$1,199 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

AppleColor RGB Monitor

Color monitor
Apple IIGS.

The AppleColor RGB Monitor simultaneously displays high-resolution text and color graphics. It features a 12-inch screen; high-resolution, analog RGB color; and direct connection to the RGB port of an Apple IIGS. The connector cable is supplied and no adapters or interface cards are necessary.
$499 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Central Point 3.5 Drive

Disk drive
Apple IIGS; Universal Disk Controller.

The Central Point 3.5-inch drive provides 800K of storage on an Apple IIGS. It connects to the Universal Disk Controller from the same company and includes an LED "in use" light. According to the vendor, the product is fully compatible with the 3.5-inch drive from Apple Computer, Inc.
$225 retail; 3.5-inch drive
$90 retail; Universal Disk Controller
Central Point Software, Inc.; 9700 SW Capitol Hwy., Ste. 100; Portland, OR 97219; 503-244-5782

CMS Series Hard Disk Subsystems

Apple SCSI hard disk drives
Apple IIGS; other Apple II models.

CMS Enhancements, Inc. provides a family of hard disk drives compatible with the Apple IIGS. Each subsystem contains two SCSI ports for daisy chaining, and supports ProDOS 8 and ProDOS 16 applications. The Apple IIGS automatically boots from the hard disk. Average access times range from 40 milliseconds (ms) for the SD60/A2S to 85ms for the SC20/A2S.
$895 retail; SC20/A2S Compact Series
$1,295 retail; SC40/A2S Compact Series
$895 retail; SD20/A2S ProDOS Stack Series
$1,095 retail; SD43/A2S ProDOS Stack Series
$1,195 retail; SD60/A2S ProDOS Stack Series
(Prices include a SCSI II Interface Card)
CMS Enhancements, Inc.; 1372 Valencia Ave.; Tustin, CA 92680; 714-259-9555

ComputerEyes IIGS

Color video digitizer
Apple IIGS; video source.

ComputerEyes IIGS is the latest digitizer from the vendor and supports all the graphics capabilities of the Apple IIGS. This hardware/software combination includes a single card that plugs into the IIGS and any standard video source, including a VCR, videodisc player, etc. Video signals are scanned and captured in under six seconds in the 320 by 200 pixel, 16-color mode or under 12 seconds in the 640 by 200 pixel mode.

Images can be acquired for many popular IIGS paint programs, including DeluxePaint and Paintworks Plus. System software included with the package allow images to be shrunk, expanded, flipped, scrolled and more. Routines also allow high-resolution and double high-resolution graphics to be converted to the IIGS super high-resolution format.
$249.95 retail
Digital Vision, Inc.; 66 Eastern Ave.; Dedham, MA 02026; 617-329-5400

ComputerEyes/2

Video digitizer with GS software support
Apple IIGS; video source.

ComputerEyes/2 is a hardware/software image capture system that connects a standard video source to any Apple II, II+, IIe or IIGS. According to the vendor, the system software is friendly and menu-driven for easy acquisition.

The ComputerEyes/2 GS Support Software allows ComputerEyes/2 to be used on the Apple IIGS to acquire and display 16 gray-level super high-resolution images of near-photographic quality.

Once acquired, images can be saved to disk in a format compatible with popular GS graphics programs such as PaintWorks Plus or DeluxePaint II.
$129.95 retail; ComputerEyes/2
$19.95 retail; ComputerEyes/2 GS Support Package
Digital Vision, Inc.; 66 Eastern Ave.; Dedham, MA 02026; 617-329-5400

Increase Your Apple IIGS Buying Power

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Apple II GS
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Surge suppression device
Apple IIGS.

The Conserver is an integrated surge suppressing unit that provides six AC outlets, surge protection and a fan. The unit acts as both a monitor stand and as a holder for one or two Apple 3.5-inch disk drives. The fan circulates and extracts air from the computer, giving maximum cooling and protection from heat-related failures.
$149.95 retail
MDIdeas, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-573-0580

DataLink
Modem board
Apple IIGS.

DataLink is a 1,200-baud internal modem for an Apple IIGS. Because it looks to the computer like an Apple Super Serial card attached to a Hayes Smartmodem, DataLink is compatible with many communications software packages designed for this combination. The modem itself uses a one-chip design, fits into any Apple IIGS slot and has a second jack for connection to a telephone.

A basic communications package is built into the circuitry of DataLink. This software in ROM can be used to replace regular communications software for many communications purposes. More powerful communications software on disk is also included.
$219 retail
Applied Engineering; PO Box 798; Carrollton , TX 75006; 214-241-6060

Digitizer And Digitizer Professional
Two-channel audio digitizer
Apple IIGS.

Digitizer inputs audio into the Ensoniq sound chip of the Apple IIGS where it is digitized and stored in memory. Digitizer allows the user to record, edit, save and playback voices, music and sound waveforms. Features include its capability to plug directly into the SuperSonic stereo card expansion connector and its high-speed CMOS sample and hold circuitry.

Digitizer Professional allows the user to digitize stereo or other two-channel audio sources. It is a complete stand-alone card, yet remains compatible with the Ensoniq sound chip and the SuperSonic stereo card. Software controlled functions allow for panning and fading effects during digitizing.
$59.95 retail; Digitizer
$149.95 retail; Digitizer Professional
MDIdeas, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-573-0580

Echo IIb Speech Synthesizer
Text-to-speech board
Apple IIGS.

The Echo IIb is a small plug-in board that features both speech synthesis and natural-voice capabilities. It is compatible with speech, educational and special-needs software written for the Echo II and Echo+ boards.

Echo IIb has an improved audio circuitry and voice and a sharper, higher-quality speaker than its predecessors. With the addition of headphones, several individuals in a classroom or computer lab can simultaneously access talking programs without disturbing fellow students.

The Echo IIb includes a number of features to aid blind and non-vocal users. It supports Textalker 3.1.2 software, an enhanced version of Textalker.
$129.95 retail
Street Electronics Corp.; 6420 Via Real; Carpinteria, CA 93013; 805-684-4593

FingerPrint G+
Parallel graphic printer interface
Apple IIGS; printer.

The FingerPrint G+ is a low-cost parallel graphics printer interface board that allows a user to connect a parallel printer to the Apple IIGS and print text and graphics in color and black-and-white. The board features the ability to dump text and graphics to the printer using keyboard commands. It is compatible with Orange Micro Grappler and supports almost all parallel printers.
$79 retail
Thirdware Computer Products; 4747 NW 72nd Ave.; Miami, FL 33166; 305-592-7522

FingerPrint GSi
Screen dump graphic utility card
Apple IIGS; printer.

The FingerPrint GSi is a screen dump graphic utility card with special desktop accessories and graphic tools that allow the user to interrupt the Apple IIGS at any moment, even if the application does not allow interrupts or access to the desktop and Control Panel. At a touch of a button, the user can access the product's desktop environment with pull-down menus. These can then control printers, handle screen dumps, or activate any of the standard, or user definable, desktop accessories.

Desktop accessories include a typewriter, calendar, calculator and more.
$99 retail
Thirdware Computer Products; 4747 NW 72nd Ave.; Miami, FL 33166; 305-592-7522

FingerPrint-Key
Voice translator
Apple IIGS; accessories.

The FingerPrint-Key is a small board that plugs into any slot of an Apple IIGS. It interrupts the link between the keyboard and the computer to provide additional ways of inputting data. It uses advanced macros to convert long text strings and numbers into just a few keystrokes, including electronic banking account numbers, phone numbers, database numbers and passwords.

FingerPrint-Key accepts a wide range of accessories through its RS-232 ports, including optical scanners.
$199 retail
Thirdware Computer Products; 4747 NW 72nd Ave.; Miami, FL 33166; 305-592-7522

FutureSound
Stereo output/digital recorder
Apple IIGS; 512K RAM, 1 MB recommended; two speakers or stereo amplifier.

FutureSound is a hardware/software package that gives the user complete control of the sound capabilities of the Apple IIGS. It records from a direct source in true stereo or mono, and comes with a microphone. The sound editor shows the sound wave and supports 15 separate tracks with splicing, looping, reversing and more special effects. The stereo output works with all stereo software available.
$279 retail
Applied Visions, Inc.; 1 Kendall Sq., Ste. 2200; Cambridge, MA 02139; 617-494-5417

Grappler C/Mac/GS
Parallel printer interface
Apple IIGS; parallel printer.

The Grappler C/Mac/GS is a universal parallel interface that allows an Apple IIGS to print on a parallel printer, such as an Epson FX-80 or laser printer. The product takes printer commands from the IIGS and converts them to a code that a parallel printer understands. As a result, an Apple IIGS "thinks" it is talking to an Apple ImageWriter printer.
$119 retail
Orange Micro, Inc.; 1400 N. Lakeview Ave.; Anaheim, CA 92807; 714-779-2772

GS-RAM And GS-RAM Plus
Extended memory boards
Apple IIGS.

The GS-RAM memory-expansion board is compatible with all operating systems for the Apple IIGS.

The board is available in 256K, 512K, 1 MB and 1.5 MB versions and can be increased to 8 MB by adding a piggyback card. It includes software that expands AppleWorks' memory limits, thereby allowing much larger databases to be created. Cache software that increases disk access time on a 3.5-inch drive is included. In addition, a graphic memory test utility is provided to test the board and any added memory chips.

The GS-RAM Plus board is available for unusually high memory requirements. It uses 1 MB RAM chips that plug into the main board. A piggyback card can be added to increase total memory to 8 MB.
$219 retail; 256K GS-RAM
$339 retail; 512K GS-RAM
$579 retail; 1 MB GS-RAM
$819 retail; 1.5 MB GS-RAM
Call for pricing; GS-RAM Plus, available 1 through 8 MB
Call for pricing; GS-RAM 2 MB expander
Applied Engineering; PO Box 798; Carrollton, TX 75006; 214-241-6060

GSX
Faster processing for the IIGS
Apple IIGS.

GSX is an add-on board that enables the IIGS to run at 5.6 MHz, twice the 2.8 MHz speed. It uses a faster 65816 processor and comes with high speed static RAM expandable to 1 MB. According to its vendor, GSX speeds up all applications.

The product installs in slot three only and acts as an accelerator and memory expansion card at the same time. GSX will be available later in 1988.
Price: N/A
MDIdeas, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-573-0580

HyperDrive FX/20
Hard disk drive
Apple IIGS; SCSI card.

The HyperDrive FX/20 is an external SCSI hard disk drive. It can be installed on an Apple IIGS with the Apple II Conversion Kit. This kit contains special Apple II editions of the HyperDrive System Software on both 3.5- and 5.25-inch disks, along with installation documentation.

When properly formatted, HyperDrive FX/20 can be plugged directly into an Apple IIGS with an Apple SCSI Card installed. It provides 20 MB for data storage.
$999 retail; HyperDrive FX/20
$30 retail; conversion kit
General Computer Corp.; 580 Winter St.; Waltham, MA 02154; 617-890-0880

ImageWriter II
Apple standard printer
Apple IIGS; other Apple models.

The ImageWriter Wide Carriage printer is a dot-matrix printer with a 15-inch wide carriage. Features include: prints at 120 characters per second and 72 lines per minute; offers a variety of character styles and graphics; provides a standard set of text characters and options; and prints on cut sheets, fan-fold continuous forms and precut labels.

The ImageWriter II is an expandable printer that offers users fast drafts, sharp graphics, near-letter-quality output and color printing.
$749 retail; ImageWriter Wide Carriage
$625 retail; ImageWriter II
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

ImageWriter LQ
Letter quality, wide carriage, dot matrix printer
Apple IIGS; other Apple models.

The ImageWriter LQ is a letter-quality, wide-carriage, dot matrix printer offering versatile paper handling capabilities that satisfy a broad range of office printing needs, such as creating letter-quality correspondence, processing multiple-part forms, printing labels, addressing envelopes and producing color-enhanced text and graphics. Its 15-inch carriage can handle full size spreadsheets and wide forms.

The ImageWriter LQ's 27-pin head provides the capability to produce letter-quality text and graphics at 216 by 216 dots per inch. It has double the density of an ImageWriter II and its print quality approaches that of the LaserWriter. It prints in three modes: draft, near letter-quality and letter quality.

An AppleTalk option is available that allows the printer to be a shared printing device on an AppleTalk network.
$1,399 retail; ImageWriter LQ
$299 retail; Sheet Feeder
$169 retail; Additional Bins
$49 retail; Envelope Feed
$150 retail; Color Ribbon (pack of six)
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

MemorySaver
Makes memory cards into ROM disks
Apple IIGS; compatible memory card.

MemorySaver is a hardware/software system that transforms standard IIGS memory cards into instant-access ROM disks. With MemorySaver, programs that once may have taken a minute or more to load can now be accessed and used much faster. Users can create a ROM disk that is larger than the 512K maximum described by Apple Computer, Inc. In addition, the product can accommodate two separate RAM cards.

MemorySaver works with several popular RAM cards besides a 2 MB card offered by the vendor. A separate power supply is included.
$149.95 retail
Checkmate Technology, Inc.; 509 S. Rockford Dr.; Tempe, AZ 85281; 800-325-7347 or 602-966-5802

MultiRam GS
Extended memory board
Apple IIGS; 256K.

MultiRam GS adds from 256K to 2 MB of memory to an Apple IIGS. This board accepts both 256K and 1 MB chips. Memory is easily installed for sizes of 256K, 1 MB, 1.25 MB and 2 MB. Graphics-oriented diagnostic software is included to test any memory a user adds.

MultiRam GS is completely compatible with the Checkmate MemorySaver ROM disk system.
$189.95 retail; 256K
Checkmate Technology, Inc.; 509 S. Rockford Dr.; Tempe, AZ 85281; 800-325-7347 or 602-966-5802

OctoRam And OctoRam ESP
Extended memory board
Apple IIGS.

OctoRam is an extended memory board that uses SIMMS (single integrated memory modules). The modules are compact and easy to install. Memory chips come in modules of 256K and 1 MB, giving users flexibility in upgrading their systems.

OctoRam is also available with an optional Extended Static Ram Pack (ESP board). This product mimics a ROM disk, allowing the Apple IIGS to access it like a fast disk drive. The ESP board can be used to allow any program to be loaded into memory in under two seconds.

$149.95 retail; OctoRam with 256K
$599.95 retail; OctoRam with 2 MB; other configurations available
$179.95 retail; 128K OctoRam ESP (requires OctoRam board)
MDIdeas, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-573-0580

On-Board
Extended memory card
Apple IIGS.

On-Board is a memory expansion card that provides up to 4 MB of memory. It comes with 0K of memory and 1,024K, 2,048K or up to 4,096K of memory can be installed by a user.

On-Board uses standard 1 MB by 1 RAM chips. It includes a memory test program, a list of RAM chip vendors and a five year warranty. It works with all DMA devices and is compatible with the MemorySaver from Checkmate Technology. A user can have up to 8 MB of memory with On-Board and the MemorySaver together.
$149.95 retail
On Three, Inc.; 4478 Market St., Ste. 701-702; Ventura, CA 93003; 805-644-3514

Parallel Pro And Buffer Pro
Parallel printer interface
Apple IIGS; other Apple II models.

Parallel Pro is a printer interface that works in any slot except three. It is fully compatible with ProDOS, DOS 3.3, Pascal and CP/M.

Parallel Pro supports most parallel printers. Additional features include: conformation to the Centronic standard; built-in control panel allows access to setup information; automatic formatting of BASIC listings; built-in self test; and extensive graphics print capability for the IIGS super high-resolution screens. Also included is a six foot cable for connecting to the printer.

Buffer Pro is an option that adds memory to Parallel Pro, freeing the Apple from running the printer. Thus, a user can continue using the computer while the printer is printing. Features include: use in a IIGS with or without fan; adds 32 to 256 pages of printer buffering; and is user expandable using 64K or 256K RAM chips.
$99 retail; Parallel Pro
$109 retail; Buffer Pro Option with 32-page buffer
$159 retail; Buffer Pro Option with 128-page buffer
$219 retail; Buffer Pro Option with 256-page buffer
Applied Engineering; PO Box 798; Carrollton, TX 75006; 214-241-6060

Passport MIDI Interface With Drum Sync
MIDI interface
Apple IIGS.

The Passport MIDI Interface With Drum Sync provides industry standard MIDI in, MIDI out and drum out connections. The board works with any MIDI keyboard and drum machine.
$129.95 retail
Passport Designs, Inc.; 625 Miramontes St., Ste. 103; Half Moon Bay, CA 94109; 415-726-0280

Passport MIDI Interface With Tape Sync

MIDI interface
Apple IIGS.

The Passport MIDI Interface With Tape Sync provides industry standard MIDI in, MIDI out, drum out and tape sync connections. The board is expanded to permit synchronized recording using conventional multitrack tape recorders.
$199.95 retail
Passport Designs, Inc.; 625 Miramontes St., Ste. 103; Half Moon Bay, CA 94109; 415-726-0280

PC Transporter

MS-DOS for the Apple II
Apple IIGS; other Apple II models; 64K.

PC Transporter is a board that brings MS-DOS capabilities to the Apple IIGS and other Apple II computers. It plugs into a single expansion slot and allows the computer to run popular PC-compatible, MS-DOS software, such as Lotus 1-2-3, MultiMate, Dbase III and more. Once installed, PC Transporter will recognize all Apple IIGS peripherals as IBM hardware. In this way, the Apple ImageWriter printer can work and act just like an IBM Graphics Printer.

PC Transporter supports either an Apple mouse or an IBM-compatible serial mouse, and supports both 3.5-inch and 5.25-inch MS-DOS formatted diskettes. Disk drives in the IBM PC-compatible 5.25-inch format are available from Applied Engineering.

The Apple 3.5 Disk Drive supports both MS-DOS and ProDOS under PC Transporter. Any combination of up to five drives will work. As for graphics, PC Transporter uses an analog monitor to provide CGA-quality graphics superior to the IBM PC and compatibles.
$489 retail; PC Transporter with 384K
$539 retail; PC Transporter with 512K
$569 retail; PC Transporter with 640K
$639 retail; PC Transporter with 768K
$269 retail; 5.25" 360K Drive
$399 retail; Dual-Drive 5.25" System
$139 retail; optional IBM-style Keyboard
Applied Engineering; PO Box 798; Carrollton, TX 75006; 214-241-6060

Phasor

Sound board
Apple IIGS.

Phasor allows an Apple IIGS to run many sound-oriented software programs written for earlier sound boards for Apple II family computers. It does this by emulating the Mockingboard, ALF music synthesizer, Echo speech board and others. The product includes a music synthesizer and one speech chip. A second speech chip can be added at a later time.

Including with Phasor is software that includes demonstration programs and utilities for composing songs.
$179 retail
Applied Engineering; PO Box 798; Carrollton, TX 75006; 214-241-6060

Plus Hard Disk Systems

Hard disk drives
Apple IIGS; SCSI port.

The Plus drives are hard disk drives that add 30, or 60 MB of storage to an Apple IIGS through a SCSI port. A 60 MB tape backup system is also available. Up to seven drives can be connected to provide a maximum of 455 MB of storage.
$895 retail; Plus-30
$1,195 retail; Plus-65
$995 retail; 60 MB tape backup system
MacPeak Systems; 1201 Spyglass; Austin, TX 78746; 512-327-3211

ProGrappler

Parallel printer interface
Apple IIGS; Apple IIe.

ProGrappler provides the hardware to connect most popular parallel printers to an Apple IIGS. It also provides many options for printing text or graphics directly from the screen. This is accomplished on the Apple IIGS through pull-down menus, allowing easy visual selection of any ProGrappler or printer features.

Printing options include inverted and rotated graphics windowing, enlargement and printing of any high-resolution graphics. All features can be accessed through traditional and English commands. ProGrappler functions can also be accessed through the IIGS Desk Accessory menu.
$119 retail
Orange Micro, Inc.; 1400 N. Lakeview Ave.; Anaheim, CA 92807; 714-779-2772

ProModem 1200A/2

Internal modem
Apple IIGS; communications software.

The ProModem 1200A/2 is a Hayes-compatible 300/1,200-baud internal modem with built-in ROM software that supports 80 columns and all modem functions. It has a built-in speaker and volume control; two phone jacks, with exclusion switching that make it easy to switch back and forth between voice and data; senses whether to tone or pulse dial; and has auto-redial-on-busy capability.
$199 retail
Prometheus Products, Inc.; 4545 Cushing Pkwy.; Fremont, CA 94538; 415-490-2370

ProModem 2400A

Internal modem
Apple IIGS; other Apple II models.

The ProModem 2400A is a Hayes-compatible 300/1200/2,400-baud internal modem that includes ProCom-A communications and word processing software. Modem features include auto answer/auto dial; on-board speaker for call progress monitoring; and a second telephone jack for voice handset.
$269 retail
Prometheus Products, Inc.; 4545 Cushing Pkwy.; Fremont, CA 94538; 415-490-2370

RamKeeper

Instant access to programs
Apple IIGS; 256K; extended memory card.

RamKeeper provides constant power to the RAM memory in an Apple IIGS, even when the computer is switched off. By so doing, programs loaded into RAM can appear on the screen within seconds of switching on the power. With RamKeeper, users can divide RAM memory into part RAM disk and part memory for programs.

Features of RamKeeper include instant access to programs without slow disk delays; long-life backup battery power; reduced power strain to the computer's power supply; support of up to two IIGS memory cards; and support of 256K and 1 MB memory chips.

The product comes complete with battery, software and documentation.
$179 retail
Applied Engineering; PO Box 798; Carrollton, TX 75006; 214-241-6060

RamPak 4GS

Extended memory card
Apple IIGS.

The RamPak 4GS memory expansion system provides a standard 512K of memory, expandable to 4 MB. It includes a memory management utilities package for RAM caching, diagnostics and dynamic allocation of memory.

The RamPak 4GS uses 256K by 4 RAM chips, enabling a user to expand in two-chip increments, as opposed to the eight-chip minimum required by other formats. Memory automatically self-configures, so no switch settings or jumpers need be changed. A RAM diagnostics utility detects and pinpoints any RAM problems that may arise.
$279 retail; 512K RamPak 4GS
Call for pricing; 256K Expansion Kit
Orange Micro, Inc.; 1400 N. Lakeview Ave.; Anaheim, CA 92807; 714-779-2772

RAMTalker Plus

Multifunction card
Apple IIGS; other Apple II models.

RAMTalker Plus is a multifunction card that combines a battery-protected RAM disk, high quality SmoothTalker speech, and a clock/calendar function all in one card.

The RAM disk is bootable in both ProDOS and DOS 3.3. A simple print command provides high quality speech without the need to load software. A clock automatically time stamps files and can display the time and date with a single keystroke.
$279 retail
Electronic Learning Systems, Inc.; 2630 NW 39th Ave.; Gainesville, FL 32605; 904-375-0558 or 800-443-7971

Serial Pro

Multifunction card
Apple IIGS.

Serial Pro is a multifunction card that combines a serial port with a functioning clock/calendar card. It can connect to a printer, modem or other serial device and is compatible with most

letter-quality and dot-matrix printers. The serial port can communicate with the fastest external modems at baud rates from 50 to 19,200.

Serial Pro's clock/calendar is ProDOS, DOS and AppleWorks compatible. All AppleWorks files are automatically time and date stamped. The card incorporates a 20-year auto recharging battery and switch selection for real-time interrupts.
$139 retail
Applied Engineering; PO Box 798; Carrollton, TX 75006; 214-241-6060

Sider

Hard disk drive and tape backup
Apple IIGS; Apple IIe.

Sider is an external hard disk available in 20 MB and 40 MB sizes. The internal Xebec controllers have a SASI/SCSI interface bus with a host interface card available for the Apple IIGS.

The interface offers fast throughput with low software overhead, an auto alternate track capability that ensures greater system integrity and convection cooling that increases reliability and reduces power consumption.

The Sider Model T6 is a tape backup subsystem for the IIGS that offers 60 MB cassette streaming tape combined with Xebec's menu-driven software for fast backup and restore capabilities.

The Sider Model C46 combines the features of the Model D4 and the Model T6 into a single "bookend style" subsystem.
$595 retail; Sider Model D2
$795 retail; Sider Model D4
$895 retail; Sider Model T6
$1,695 retail; Sider Model C46
$1,795 retail; Sider Model D9
$2,695 retail; Sider Model C96
First Class Peripherals; 3579 Hwy. 50 E.; Carson City, NV 89701-2826; 800-982-3232

Smartmodem 1200A

Modem
Apple IIGS; communications software.

Smartmodem 1200A provides 1,200-baud communications capability, call-progress monitoring, built-in test modes, Hayes Standard "AT" command set implementation, voice and data transmission, auto-dial and auto-answer modes, two phone jacks, redialing and more.

Smartmodem 1200A may be operated using a new version of Smartcom communications software from Hayes, sold separately.
$349 estimated retail; Smartmodem 1200A
$119 retail; Smartcom software
Hayes Microcomputer Products, Inc.; PO Box 105203; Atlanta, GA 30348; 404-449-8791

Supersonic

Digitized stereo card
Apple IIGS.

Supersonic uses the Ensoniq sound chip to produce stereo sound for any software that addresses the sound capabilities of the Apple IIGS. The card plugs into any slot and has high-speed circuitry for separating two channels into true stereo sound.

Filters allow only selected frequency sounds to pass through for distortion-free sound, and buffer amplifiers isolate the audio further for even cleaner sound.

The unit comes with two .5-watt amplifiers that can drive 8-ohm mini speakers. A user can also select power output levels for speakers, headphones or hi-fi stereos (line level output).
$59.95 retail
MDIdeas, Inc.; 1163 Triton Dr.; Foster City, CA 94404; 415-573-0580

ThunderScan

Low-cost digitizing
Apple IIGS.

ThunderScan fits into any ImageWriter printer, except the LQ, and replaces the ribbon cartridge with a digitizing scanning cartridge. Printed images are then scanned by ThunderScan, and the software shows 16 shades of gray that can be changed in contrast and brightness according to the user's specifications.

Once the user has an image to his liking, he can save it for use with painting programs like DeluxePaint II, 816/Paint and Paintworks Plus. Images can also be combined with text, frames and objects using Top Draw and the new desktop publishing packages. ThunderScan supports super high-resolution in both the 320 and 640 modes.
$219 retail
Thunderware, Inc.; 21 Orinda Way; Orinda, CA 94563; 415-254-6581

TopRAM, TopRAM Plus And MegaROM

Low-cost memory card
Apple IIGS.

TopRAM is an inexpensive memory card that has an expansion capability for adding additional ROM and other add-ons. It is fully Apple and DMA compatible, and comes with all RAM chips socketed. TopRAM is available with 0K, 256K, 512K or 1,024K installed.

TopRAM Plus is an expandable memory card that uses 1MB RAM chips, allowing users to add 1 to 4 MB of memory to their computers.

MegaROM is an add-on product that attaches to TopRAM or TopRAM Plus. MegaROM provides up to 896K of ROM expansion in the form of 14 EPROMs.
$69.95 retail; (0K) TopRAM
$189.95 retail; (256K) TopRAM
$299.95 retail; (512K) TopRAM
$499.95 retail; (1,024K) TopRAM
$69.95 retail; MegaROM
$499.95 retail; TopRAM Plus (includes 1 MB)
Parallax, Inc.; 5249 Locust Ave.; Carmichael, CA 95608; 916-721-5451

Universal Disk Controller Card

Connecting card
Apple IIGS; compatible drives.

The Universal Disk Controller Card connects many combinations of disk drives on an Apple IIGS, including 5.25-inch disk drives, the Apple UniDisk 3.5 and Macintosh-compatible 400K and 800K drives.

Two different drive types (a 5.25- and a 3.5-inch drive) can be connected to the card simultaneously. With any supported drive, data transfer rate occurs at full speed.
$90 retail
Central Point Software, Inc.; 9700 SW Capitol Hwy., Ste. 100; Portland, OR 97219; 503-244-5782

Music

Diversi-Tune

MIDI music program
Apple IIGS; 512K; MIDI interface optional.

Diversi-Tune turns the Apple IIGS into a MIDI synthesizer and recorder. A musician can play and record up to 32 MIDI channels simultaneously, using one or two MIDI keyboards or controllers connected with Apple MIDI boxes. Each channel can be assigned to one of 128 active instrument sounds, which can be changed during a song with MIDI patch change commands.

After recording a song, a musician may then type in the words to the song and "sing-along" as the words are displayed during playback.

Diversi-Tune includes a full, 88-key piano keyboard display that shows which keys are being played at any time.
$55 retail
Diversified Software Research, Inc.; 34880 Bunker Hill; Farmington, MI 48331-3236; 313-553-9460

ECS Music Training Programs

Family of music training products
Apple IIGS; MIDI card; synthesizer.

Electronic Courseware Systems, Inc. offers a broad range of IIGS-compatible products for music training purposes. Software is available for learning music basics as well as more advanced musical concepts. All programs require at least an Apple IIGS, and in many cases additional hardware is required, such as a Passport or Sonus MIDI card, or a Roland MIDI interface, MPU and synthesizer.
$39.95 retail; Keyboard Tutor-MIDI
$39.95 retail; Early Music Skills-MIDI
$79.95 retail; Keyboard Extended Jazz Harmonies-MIDI
$39.95 retail; Tap-It
$79.95 retail; Keyboard Fingerings-MIDI
$79.95 retail; Keyboard Chords-MIDI
$79.95 retail; Keyboard Arpeggios-MIDI
$79.95 retail; Keyboard Speed Reading-MIDI
$39.95 retail; Musical Stairs-MIDI
$39.95 retail; Note Speller
$99.95 retail; Elements Of Music
$99.95 retail; Music Flash Cards
$99.95 retail; Patterns In Pitch
Electronic Courseware Systems, Inc.; 1210 Lancaster Dr.; Champaign, IL 61821; 217-359-7099

Instant Music
Music composition system
Apple IIGS; 512K.

Artificial Intelligence makes Instant Music a creative music composition tool for musicians and non-musicians. Up to four instruments can be played at once. The user can control one instrument with the mouse and "jam" along with the computer as it plays the other instruments.

For composition, the user simply draws a line on the screen with the mouse and the program fills in the proper notes along the line. The user can zoom in to see several measures at a time or just one measure.
$49.95 retail; Instant Music
$29.95 retail; It's Only Rock 'N Roll
$29.95 retail; Hot & Cool Jazz
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

Master Tracks Jr.
MIDI recording studio
Apple IIGS; 256K; MIDI interface; MIDI equipped instrument.

Master Tracks Jr. is a personal MIDI recording studio for the Apple IIGS. It provides the tools for composing, recording and editing music with a graphical interface. Its on-screen play, record, pause fast forward and rewind controls allow users to move through the song and record or play from any point. Users can record live by playing their MIDI instrument or by step inputting songs note by note. According to the vendor, Master Tracks Jr. will be available in July, 1988.
$149.95 retail
Passport Designs, Inc.; 625 Miramontes St., Ste. 103; Half Moon Bay, CA 94109; 415-726-0280

Music Construction Set
Digital sound creation
Apple IIGS; 256K; stereo card and speakers recommended.

The Music Construction Set is a complete revision of the best-selling program available for the Apple IIc and Apple IIe. It lets a user compose music, play it back and print out sheet music of all songs created. Prior knowledge of music is not required.

New features developed for the Apple IIGS include 33 digitized instruments; MIDI output; stereo music capability; and music input with a mouse.
$49.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

MusicShapes
Musical graphics
Apple IIGS.

MusicShapes is a creative learning environment that involves the user in the process of music making and idea development. The user travels back and forth between screens making and arranging graphic patterns to produce rhythmic, melodic and sound patterns. These musical blocks can be built into complex multitimbrel musical structures.

The program allows the user to modify sounds stored in the program. These sounds can be produced by the Ensoniq chip or by linking the Apple II to a Casio CZ or other synthesizer.

The goal of MusicShapes is to stimulate creative thinking and enhance musical understanding and sensitivity through the active involvement in music composition. No knowledge of notation is necessary.
$175 retail
Music Systems for Learning, Inc.; 311 E. 38th St., Ste. 20C; New York, NY 10016; 212-661-6096

Pyware Music Writer
Professional music program
Apple IIGS; 768K; printer; optional MIDI compatible synthesizer.

Pyware Music Writer is a music writing program designed for the Apple IIGS. It offers extensive use of the Ensoniq sound chip, a wide variety of symbols, complete control of symbol placement, automatic barring, automatic stem changing during transposition, automated error checking and more.

The program provides fast input and editing and supports copy, cut, paste, invert and transpose. It uses a Macintosh-style interface with pull-down menus and icons. It supports the Apple ImageWriter printer or the Apple LaserWriter. Three levels are available: Limited Edition, which includes a Basic Music Theory Guide designed for beginners and includes three staves; Special Edition, which is designed for writing medium-sized scores and includes six staves; and Professional Model, which allows 32 staves and full scores. MIDI in and MIDI out are also supported.
$119 retail; Limited Edition
$295 retail; Special Edition
$595 retail; Professional Model
Pygraphics Corp.; PO Box 639; Grapevine, TX 76051; 800-222-7536 or 817-481-7536

The Music Studio 2.0
Making music on the IIGS
Apple IIGS; 512K.

The Music Studio 2.0 incorporates all of the features of its predecessor. It offers pull-down menus and pop-up menus to help users write music on the program's screen. A large double-staff occupies the middle of the screen, and users determine note duration, block operations, rest durations and time signatures by clicking on them with the mouse. The program also offers a music paintbox, where users can play music with no knowledge of formal notation. Users can output to a MIDI device for high quality sound, and octave ranges are available for up to 15 instruments. In addition, up to three lines of lyrics can be input for a song.

The Music Studio now 2.0 offers real-time MIDI in so users can enter chords using MIDI-equipped instruments as well as a mouse. In addition, users can change tempo, volume and key signature at any point during a song; play multiple songs with the Jukebox; change the note stem direction by pressing the space bar; merge songs; insert measure bars for more precise rhythm control; and more.
$89.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

Networking

AppleShare File Server V. 2.0
Workgroup file server software
Apple IIGS; other Apple computers.

The AppleShare File Server V. 2.0 provides several new administrative features, including on-line server administration. This permits activities such as creating new user names or groups while the file server remains available to users on the network.

In addition to Macintosh and MS-DOS computers, the AppleShare File Server now supports Apple IIe and Apple IIGS computers. Network versions of ProDOS applications can be stored on the AppleShare File Server for easier data management in computer labs and classrooms. In addition, Apple IIGS users can start their computers without requiring disks.

The Inter•Poll Network Administrator's Utility is a software application that contains tools that an AppleTalk network administrator can use to implement a network support program. It includes an administrator's guide with suggestions for network planning and configuration. In addition, the Inter•Poll application lets network administrators generate lists of active network devices to monitor internetworks and to locate network cabling breaks.
$799 retail; AppleShare File Server
$129 retail; Inter•Poll Network Administrator's Utility
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

AppleShare IIGS Workstation Software
Workgroup software
Apple IIGS; other Apple models.

The AppleShare IIGS Workstation Software lets users connect to an AppleTalk network via LocalTalk cabling for shared access to an AppleShare File Server as well as networked LaserWriter and ImageWriter printers. Users have access to all the features of the AppleShare File Server including AppleShare-aware ProDOS applications and file and print service capabilities. One Apple IIGS Workstation Software package is required for each file server.
$249 retail; Apple II Workstation Card
$99 retail; Apple IIGS Workstation Software
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

AppleShare Print Server
Network print server
Apple IIGS; other computers.

The AppleShare Print Server, an enhanced version of LaserShare, offers concurrent support of up to five printers. A single server can handle combinations of networked LaserWriter, ImageWriter II and ImageWriter LQ printers. The AppleShare Print Server runs concurrently with AppleShare File Server on the same Macintosh server, letting users continue working instead of waiting for documents to print.

AppleShare Print Server can be accessed from any Macintosh, enhanced Apple IIe, Apple IIGS or MS-DOS workstation on the network.
$299 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

Aristotle
Provides educational institutions with access to ProDOS applications
Apple IIGS; other Apple II models.

Aristotle is specifically designed for primary and high schools to give students, teachers and others, using individual enhanced Apple IIe and Apple IIGS workstations, fast and easy access to ProDOS applications stored on an AppleShare File Server. The Aristotle applications selector resides on the server and can be shared by all workstation users.

Aristotle also features a menu management program that lets teachers and network administrators specify which applications each study group can access. Network administrators or teachers can customize student menus and easily modify available selections at any time.
$199 retail
Apple Computer, Inc.; 20525 Mariani Ave.; Cupertino, CA 95014; 408-996-1010

On-Line Databases

Compuserve
Telecomputing network
Apple IIGS; modem; communications software.

Apple IIGS users on the Compuserve network have access to several Apple forums, including an Apple II forum (MAUG) with lively interest in the Apple IIGS. Subscribers share information about peripherals, music, technical information and software. In addition, electronic mail allows members from across the country to communicate with one another.

Compuserve maintains a large database of free public domain software in its Apple forum. The only expense for downloading is connect time. Publications, such as the electronic editions of various computer magazines, are also maintained in the forums.
$39.95 retail; Subscription Kit
Compuserve Information Services; PO Box 20212; 5000 Arlington Centre Blvd.; Columbus, OH 43220; 800-848-8199

GEnie
Make friends on line
Apple IIGS; modem.

GEnie is an information exchange with special interest groups set up for Apple II users. Software is available for downloading, and users can participate in on-line conferences, CB simulations and more. Databases available include American Airlines travel service, Grolier's electronic encyclopedia, games, financial services and others.
$5 per hour retail (after hours)
General Electric Information Services Co.; 401 N. Washington St.; Rockville, MD 20850; 800-638-9636

The Source/AppleSIG
Telecomputing network
Apple IIGS; modem; communications software.

The Source, a nationwide on-line database, offers AppleSIG, an on-line network of special interest to Apple IIGS owners. Members can meet other members on-line to discuss computer questions, problems, etc. In addition, AppleSIG maintains a large database of free public domain software, including AppleWorks templates, available for downloading.

Members already on AppleSIG include Apple experts, experienced programmers, user group presidents, businesspeople, investors and hobbyists.

An electronic version of The Apple IIGS Buyer's Guide is updated quarterly on AppleSIG. Users can search by price, company, product name, vendor and more.
$29.95 retail; one-time membership dues
$7.80 per hour retail; 1,200 baud on evenings and weekends
The Source; 1616 Anderson Rd.; McLean, VA 22102; 800-336-3366 or 703-734-7500

Programming And Utilities

AC/Basic Compiler
Basic compiler
Apple IIGS; 512K.

The AC/Basic Compiler is a 16-bit compiler designed specifically for the Apple IIGS. It provides a powerful programming environment for BASIC programmers by offering features such as IEEE and decimal math, dynamic arrays, direct window access and support for Apple's standard user interface. It allows developers to port BASIC programs to and from the Macintosh and IBM PC.
$125 retail
Absoft Corp.; 2781 Bond St.; Auburn Hills, MI 48057; 313-853-0050

Apple IIGS BASIC
A custom BASIC for the IIGS
Apple IIGS; 512K.

Apple IIGS BASIC is an implementation of the BASIC programming language especially designed for the Apple IIGS. The program features a full set of control structures comparable to those found in modern languages such a C or Pascal. These include Do/While, Do/Until, While/Until and Do/While/Until. In addition to providing full support for structured programming, procedures and functions with local labels, Apple IIGS BASIC includes full support for the Apple IIGS tools.
$50 retail; $20 per year membership required
Apple Programmer's and Developer's Association; 290 SW 43rd. St.; Renton, WA 98055; 206-251-6548

APW C: Apple IIGS Programmer's Workshop C
Compiler for APW
Apple IIGS; APW; 1.25 MB RAM; two 3.5-inch disk drives; hard disk recommended.

APW C: Apple IIGS Programmer's Workshop C is a compiler from Apple Computer, Inc. that works within APW, Apple's native development system for the Apple IIGS. APW C is a full Kernighan and Ritchie implementation of C and generates APW object files. It includes a standard C I/O library and IIGS tool interfaces.
$75 retail
Apple Programmer's and Developer's Association; 290 SW 43rd. St.; Renton, WA 98055; 206-251-6548

APW: Apple IIGS Programmer's Workshop
Software development system
Apple IIGS; 1.25 MB; two 3.5-inch disk drives; hard disk recommended.

As a complete development system, APW: Apple IIGS Programmer's Workshop includes a command shell, linker and utilities. It is the host for other APW languages, such as APW C and several third-party language products. It includes a complete 65816 macro assembler.

The command shell performs functions such as file management, directory listing, I/O redirection and pipelining. The shell environment also provides utility programs with useful extensions to ProDOS 16.

The assembler produces 68516 programs that assemble to relocatable object modules. Various utility programs and revised up-to-date tool interfaces are included.
$100 retail
Apple Programmer's and Developer's Association; 290 SW 43rd. St.; Renton, WA 98055; 206-251-6548

Copy II Plus 8.2
Backs up copy-protected disks
Apple IIGS; other Apple II models.

Copy II Plus 8.2 is an update of the vendor's ProDOS/DOS 3.3 utility program. The new version includes a disk bit copy program that supports both the IIGS and Central Point's Universal Disk Controller Card. It provides full 3.5-inch disk support for the nibble editor, block editor, high-resolution disk scan and parameter files for the

latest IIGS software. With the program, users can transfer many protected IIGS software titles to a hard disk.
$39.95 retail
Central Point Software, Inc.; 9700 SW Capitol Hwy., Ste. 100; Portland, OR 97219; 503-244-5782

Disk Util II
Backs up copy-protected software
Apple IIGS.
Disk Util II is a utility program for backing up many copy protected programs. Once backed up, many programs can then be uploaded to RAM disks, ROM disks or hard disks. According to its manufacturer, Disk Util II supports most of the latest copy protected applications on the market.
$59.95 retail
FWB, Inc.; 2040 Polk St., Ste. 215; San Francisco, CA 94109; 415-474-8055

Graphic Environment Operating System (GEOS)
Operating system
Apple IIGS; other Apple II models.
The Graphic Environment Operating System (GEOS) is a new operating system that allows Apple II users to enhance their computers with graphic interface capabilities including icons, pop-up menus and windows. The GEOS program includes an operating system; a full range of desk accessories (alarm clock, calculator, etc.); and applications that provide word processing, graphic design and spell check capabilities.
GEOS accepts input from word processing programs such as AppleWorks, Multiscribe GS and others, and converts the input to GEOS format. It also prints to the LaserWriter.
$129.95 retail
Berkeley Softworks; 2150 Shattuck Ave.; Berkeley, CA 94704; 415-644-0883

Graphics Supermarket
Converts images into code
Apple IIGS; 512K.
The Graphics Supermarket automatically takes shapes, patterns, icons or entire screens that the user creates and translates them into assembly or C source code. It can also convert images from other programs. The code can then be used in the user's programs, and no licensing fees are required for use in commercial products.
The Graphics Supermarket gives precise, step by step program source codes for using shapes in programs. All necessary sources are given for the following languages and operating systems: Assembly, Applesoft, C, DOS 3.3, ProDOS 8 and ProDOS 16.
$49.95 retail; program only
$149.95 retail; program and source code
Abracadata; PO Box 2440; Eugene, OR 97402; 503-342-3030

GS Memory Test
Tests memory
Apple IIGS; extended memory card.
The GS Memory Test performs a number of tests on a user's extended memory card. Its high-resolution graphic screen displays the faulty chips in cases where the computer memory fails. The product includes a list of RAM chip vendors.
$19.95 retail
On Three, Inc.; 4478 Market St., Ste. 701-702; Ventura, CA 93003; 805-644-3514

HyperLaunch
Utility software
Apple IIGS; 256K.
HyperLaunch is a software program for the Apple IIGS that allows a user to run any ProDOS, DOS 3.3 or CP/M program. It also permits any ProDOS program to be designated as the temporary boot program.
By custom programming the 16 buttons within HyperLaunch, a user can launch many graphic, entertainment, business, productivity, music and other software with a single click of the mouse. A unique "Smartscan" feature checks user input during programming.
$34.95 retail
GoldenWest Technology; 1271 Carl St.; Anaheim, CA 92806; 714-635-2226

KeyLISP
LISP programming language
Apple IIGS; other Apple II models.
KeyLISP is a full-featured implementation of the LISP language for the Apple II series. The interpreter consists of a single file called LISP.SYSTEM that is functionally similar to the BASIC.SYSTEM file familiar to ProDOS users. More than 220 LISP functions are defined in machine language within the interpreter. Documentation consists of a 424-page bound book that describes each function in detail. It includes examples and tutorial sections rated in five categories, from novice to expert.
$149 retail
XPrime Corp.; 10835 Santa Monica Blvd., Ste. 204A; Los Angeles, CA 90025-4656; 213-470-4663

LifeGuard
File recovery software
Apple IIGS; 256K.
LifeGuard protects Apple IIGS users from accidental loss of data by providing the ability to recover disk files that have been deleted. Files deleted under ProDOS 16 and ProDOS 8 can be recovered.
The program uses the GS mouse and a Macintosh-like interface and can search entire disks for missing files, using full or partial names given by the user or words and sentences as descriptions. Files can be found based on contents, without knowing their names.
$59.95 retail
MicroSparc, Inc.; 52 Domino Dr.; Concord, MA 01742; 617-371-1660

Logo Software
Programming and graphics environment
Apple IIGS; other Apple II models.
LogoWriter integrates word processing and graphics in the Logo programming environment. The program features a full range of Logo capabilities including turtle graphics, programmable word processing, list processing, math operations, interactive programming and music. A library of flexible learning and teaching materials offers a number of projects and activities.
LCSI Logo II, the new and enhanced version of Apple Logo II, is also available through the company. It is both a programming language and a hands-on learning environment.
$450 retail; site license
$299 retail; primary lab pack
$299 retail; intermediate lab pack
$129 retail; starter set
$129 retail; primary set
$549 retail; site license LCSI Logo II
$399 retail; LCSI Logo II lab pack
$99 retail; LCSI Logo II single-user
LCSI; 1000 Roche Blvd., 9th Floor; Vaudreuil, Quebec, Canada J7V 6B3; 514-455-5636 or 800-321-5646

Mac.Transfer
Data transfers for the IIGS
Apple IIGS; other computer; cables or modem.
Mac.Transfer is a text file transfer program that provides a method for moving text and data from one computer system to another so that essential word processing, database and spreadsheet information is not lost. The program transfers data back and forth from Apple II and IBM PC computers to the Macintosh or Apple IIGS. Documentation explains how the connection between computers can be made via modem or direct cable.
$60 retail; Mac.Transfer
$22 retail; cables
Southeastern Software; 7743 Briarwood Dr.; New Orleans, LA 70128; 504-246-8438

MACtoGS Assembler/Linker
Cross development system
Apple IIGS; Macintosh.
MACtoGS Assembler/Linker is a cross development system that allows a user to develop Apple IIGS assembly language programs on the Macintosh. Features include a fully implemented 65816 assembler and linker, a multiple-window editor with Undo, compatibility with the Apple IIGS Programmers Workshop (APW) and ability to produce complete stand-alone IIGS applications.
The system supports all Apple IIGS ROM and Library routines, includes tools for file transfer of source and applications files and assembles up to 10,000 instructions per minute.
$195 retail
Consulair Corp.; 140 Campo Dr.; Portola Valley, CA 94025; 415-851-3272

Merlin 8/16

Three assemblers in one
Apple IIGS; other Apple II models.

Merlin 8/16 includes three assemblers in one package: Merlin 16 for assembling 8 and 16 bit ProDOS programs on the Apple IIGS and other Apple IIs equipped with a 65802 or 65816 chip, and two versions of Merlin 8 for assembling 8 bit ProDOS and DOS 3.3 programs. Merlin 8/16 is compatible with all source listings created with Merlin or Merlin Pro, and APW (ORCA/M) source files can be loaded, edited and assembled with Merlin 16.

Features of Merlin 16 include a relocating linker that generates relocatable object codes, library routines and run time packages. It also supports batch processing and conditional reassembly, plus multiple file and/or segment output. Files may be created that run directly under ProDOS 16, including system files, desk accessories, device drivers, etc.

$124.95 retail
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

MouseFiler 2.0

A Macintosh-like environment
Apple IIGS; other Apple II models.

MouseFiler brings the same user interface as the Macintosh to the Apple IIGS, and, in effect, replaces The Finder. It includes pull-down menus that allow a user to select files with just a few clicks of the mouse. The product can copy and select single files, groups of files, files that only contain certain types, and so on. In addition, MouseFiler can run and list programs from the menu, and a file find feature is integrated into the system.

$69.95 retail
Harbor Software, Inc.; 403 Great Rd., Ste. 8; Acton, MA 01720; 617-263-1870

ORCA/BASIC Interpreter And Compiler

BASIC programming on the IIGS
Apple IIGS.

The ORCA/BASIC Interpreter And Compiler are an extended version of Applesoft BASIC running on a desktop environment. Included is a source level debugger. Extensions include Print Using, If-Then-Else, While statement, subroutines with passed parameters, multiline functions, true local variables and more. The compiler also supports variable dimensions for array declarations.

The ORCA/BASIC Compiler And Interpreter are part of a multilingual environment compatible with any Apple Programmer's Workshop (APW) or ORCA compiler or assembler.

$50 retail; ORCA/BASIC Interpreter
$95 retail; ORCA/BASIC Compiler
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

ORCA/Desktop For The IIGS

Programming environment for APW
Apple IIGS.

ORCA/Desktop For The IIGS is a programming environment that provides multiple windows, pull-down menus and mouse support for APW languages. Text and graphics can appear on the screen at the same time, allowing program output and source code to be viewed together.

The pull-down menus provide support for copying and deleting files, global search and replace, cut, copy, paste, spilt screen and more. ORCA/Desktop For The IIGS will work with any APW or ORCA language.

$60 retail
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

ORCA/M Assembler For The Apple IIGS

Assemble language programming
Apple IIGS; 512K.

ORCA/M is a complete development environment for assembly language programming on the Apple IIGS. The system includes the assembler with full macro capabilities, link editor, command processor, full screen text editor, disassembler, utilities, and macro and subroutine libraries. The product supports 65816, 65C02 and 6502 instruction sets. It's also compatible with ORCA/Pascal, APW C and the ORCA/BASIC compilers. It's Interchangeable with the Apple IIGS Programmer's Workshop.

$69.95 retail
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

ORCA/M Support Programs

Support for ORCA/M
Apple IIGS; ORCA/M For The Apple IIGS.

The Utility Package #1 adds 12 new commands to the ORCA/M, ORCA/BASIC, ORCA/Pascal or Apple Programmer's Workshop shell. The utilities include: calendar, bad-block check, file compare, lowercase conversion, quick sort, control character strip, tab and space trip and more. Source code is also included.

Subroutine Library Source contains the source code to the ORCA/M 1.0 subroutine libraries, including integer math, formatter I/O, number-string conversions, etc. All are called via the standard macro library.

The Merlin to ORCA/M Source Code Translator takes Merlin source code as input and writes ORCA source code as output. All labels and instructions are translated. ProDOS 8 and ProDOS 16 versions are included, and the program comes with source code.

$39.95 retail; Utility Package #1
$39.95 retail; Subroutine Library Source
$29.95 retail; Merlin to ORCA
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

ORCA/Pascal For The IIGS

Pascal programming language
Apple IIGS.

ORCA/Pascal For The IIGS is an implementation of standard Pascal with all of today's popular extensions. It comes with a desktop programming environment and source level debugger. Multiple windows allow source code, text or graphics output and the debugger to appear on the screen at the same time.

The debugger supports step and trace, real time execution of subroutines and break points. A variables window displays the variables as the program runs. Also included is support for debugging machine language programs.

ORCA/Pascal For The IIGS is part of a multilingual environment compatible with the APW C compiler, the ORCA/M macro assembler and the ORCA/BASIC compiler and interpreter.

$150 retail; ORCA/Pascal with desktop and debugger
$125 retail; ORCA/Pascal with text environment
The Byte Works, Inc.; 4700 Irving Blvd. NW, Ste. 207; Albuquerque, NM 87114; 505-898-8183

The Diversi Series

Disk drive helpers
Apple IIGS.

The Diversi series is a family of utility software designed to enhance performance of the Apple IIGS and disk drives. Diversi-Key is a keyboard macro generator that allows users to design single-key macros that replace hundreds of keystrokes. Users can define, edit, display and load macros for use in many programs, including AppleWorks.

Diversi-Cache speeds the performance of 3.5-inch disk drives, without the use of a RAM disk. According to its vendor, programs run up to five times faster after booting with Diversi-Cache.

Diversi-Copy lets users copy unprotected 3.5- or 5.25-inch disks at maximum speeds. It uses up to 800K in RAM for one-pass copying.

$45 retail; Diversi-Key
$35 retail; Diversi-Cache
$30 retail; Diversi-Copy
Diversified Software Research, Inc.; 34880 Bunker Hill; Farmington, MI 48331-3236; 313-553-9460

The Power System

Programming systems
Apple IIGS; other Apple II models.

The Power System is comprised of three separate programming languages, and special implementation for the Apple IIGS are available. They are UCSD Pascal, Modula-2 and Fortran-77. Each one features fast compilation with compact code, virtually no source or code size restriction, dynamic memory management, automatic overlay scheme, error handling, machine-independent screen management, program chaining, I/O redirection, event driven multitasking, auto startup of applications and full compatibility with the programmer's file system and hardware.

$99.95 retail; UCSD Pascal
$99.95 retail; Modula-2
$99.95 retail; Fortran-77
Pecan Software Systems, Inc.; 1410 39th St.; Brooklyn, NY 11218; 718-851-3100 or 800-637-3226

TML BASIC

Full-featured BASIC compiler
Apple IIGS; 512K.

TML BASIC is a modern 16-bit BASIC compiler designed specifically for the Apple IIGS. The program is compatible with Apple's GS BASIC inter-

preter and offers much of the same functionality as the company's TML Pascal.

TML BASIC creates stand-alone ProDOS 16 applications, provides access to the Apple IIGS Toolbox, produces super high-resolution graphics, provides access to the IIGS' sound functions and more. It also offers advanced language features, including Print Using, Do/While, Until and If/Then/Else. Over 500 pages of documentation provides all the information needed to use both TML BASIC and the Apple IIGS.

$125 retail; TML BASIC
$69 retail; TML Speech Toolkit
TML Systems, Inc.; 8837-B Goodbys Executive Dr.; Jacksonville, FL 32217; 904-636-8592

TML Pascal Family

Complete Pascal programming
Apple IIGS; 512K; extended memory board recommended.

The stand-alone version of TML Pascal is a native code Pascal compiler that provides access to the Apple IIGS Toolbox for creating ProDOS 16 applications and both new and classic desk accessories. It implements a fully integrated programming environment for writing, editing, compiling and running applications. The software compiles at more than 6,000 lines of source code per minute.

The Apple Programmer's Workshop (APW) version of TML Pascal is fully compatible with the stand-alone version. It is a one-pass compiler that features separate compilation of units and complete access to the Toolbox. The APW software package is required to use this second version.

The TML Source Code Library is a collection of TML Pascal source code example applications that demonstrate the use of IIGS ROM Tools.

The TML Speech Toolkit is capable of converting English text into computer-generated speech using the IIGS Ensoniq sound chip. It supports both male and female speech as well as control over the speed, pitch and volume of the speech generated. Compatible with both TML Pascal and TML BASIC, the TML Speech Toolkit allows computer-generated speech to be added to any program written in either language.

$125 retail; TML Pascal
$125 retail; TML Pascal APW
$49 retail; The Source Code Library
$69 retail; TML Speech Toolkit
TML Systems, Inc.; 8837-B Goodbys Executive Dr.; Jacksonville, FL 32217; 904-636-8592

ZBasic 4.2

ProDOS compiled BASIC
Apple IIGS; other Apple II models.

ZBasic 4.2 for ProDOS is a compiler that incorporates many new commands and features over the previous DOS 3.3 version. New features include support of ProDOS pathnames, double high-resolution graphics, MouseText characters, customized character sets and use of the Apple Mouse. A full screen editor that uses WordStar keystroke commands has also been included.

$69.95 retail
Zedcor, Inc.; 4500 E. Speedway, Ste. 22; Tucson, AZ 85712; 800-482-4567 or 602-881-8101

Word Processing

//Write

Multiple windows
Apple IIGS; other Apple II models.

//Write is a word processor that features multiple document windows, full control of commands through the mouse and keyboard, true what-you-see-is-what-you-get displays, cut-and-paste capabilities, pull-down menus, a wide range of font and type styles, scroll bars, multifaceted alignment rulers and shortcut keys for experienced users.

Other features include cut, copy, paste, find or change and delete; and align left, right, justify and center.

$79.95 retail
Random House, Inc.; 400 Hahn Rd.; Westminster, MD 21157; 800-638-6460

DeluxeWrite

Combines text and graphics
Apple IIGS; 768K.

DeluxeWrite is a word processor that combines text and graphics to create documents that are perfect for letters, school reports, business reports or other documents.

It can import, move, crop and resize graphic images, thus making it possible to add a colorful touch to any document.

DeluxeWrite's text features include: multiple documents, a 90,000-word spelling checker; cut, paste, search and replace; headers and footers, and AppleWorks compatibility.

DeluxeWrite is compatible with DeluxePaint II, DeluxePrint II and other IIGS graphics programs.

$99.95 retail
Electronic Arts; 1820 Gateway Dr.; San Mateo, CA 94404; 415-571-7171

GraphicWriter Version 2.0

Graphics/word processor
Apple IIGS; 512K; extended memory card recommended.

GraphicWriter Version 2.0 is a combination page-layout, graphics and word processing program for the Apple IIGS. All three functions can occur "overlayed" on the same page.

Features include automatic multicolumn text (in which text wraps between columns), text formatting for wrapping around pictures and illustrations, LaserWriter printing and over 1,000 type style variations.

Graphic tools allows precision graphic drawing within multiple regions on a page layout, while its on-line paint tools allows free form drawing, all in 48 colors. GraphicWriter can also import graphics or text from other programs.

As a word processor, GraphicWriter also provides text justification, tab settings, paragraph formatting, running headers and footers, superscript and subscript, and search and replace, along with a fonts and styles.

$149.95 retail
DataPak Software, Inc.; 14011 Ventura Blvd., Ste. 507; Sherman Oaks, CA 91423; 800-327-6703 or 818-905-6419

MouseWrite Version 2.6

Moused-based word processor
Apple IIGS; extended memory card recommended; two disk drives.

MouseWrite Version 2.6 is a ProDOS mouse-based word processor that features pull-down menus, mouse control and support of expanded memory environments. The expanded desktop can handle up to 12 open documents at once, and a feature called Print-While-You-Work has background print spooling ability.

Other enhancements include an integrated spelling checker, mail merge, communications, glossary and the ability to directly load AppleWorks word processing files without conversion.

$149.95 retail
Roger Wagner Publishing, Inc.; 1050 Pioneer Way, Ste. P; El Cajon, CA 92020; 619-442-0522

Multiscribe GS 3.0

Word processor with graphics
Apple IIGS; 768K.

Multiscribe GS 3.0 is a mouse-based word processing program that brings Macintosh-like pull-down menus, windowing and fonts to an Apple IIGS. It lets users choose from a selection of fonts and character sizes and offers what-you-see-is-what-you-get word processing.

Multiscribe GS 3.0 also allows a user to open eight different document windows at once. Editing options include the Cut, Copy, Paste and Undo commands.

The latest version includes an 80,000-word spell checker and thesaurus that provides alternative suggestions that are made phonetically as well as typographically.

$99.95 retail
StyleWare, Inc.; 5250 Gulfton, Ste. 2E; Houston, TX 77081; 713-668-1360

Sensible Grammar

Proofreading program
Apple IIGS; word processing program.

Sensible Grammar is a proofreading program that checks word processing files for common writing errors. It contains a library of more than 2,000 commonly misused English phrases to identify pompous, informal, cliche, vague, wordy, repetitive and other faulty phrases in writing. The program also catches punctuation, capitalization and other typographical errors, such as repeated words.

$99.95 retail
Sensible Software, Inc.; 335 E. Big Beaver, Ste. 207; Troy, MI 48083; 313-528-1950

Sensible Speller For ProDOS

Electronic dictionary
Apple IIGS; word processing program.

Sensible Speller is an electronic dictionary designed to correct misspellings after a document has been written. The program contains the 80,000-word Concise Edition of the Random House Dictionary on disk. It suggests spellings

and allows automatic replacement of words. Words can be added to the dictionary or the user can create a personal dictionary.
$125 retail
Sensible Software, Inc.; 335 E. Big Beaver, Ste. 207; Troy, MI 48083; 313-528-1950

Sensible Writer

Word processor
Apple IIGS.

Sensible Writer uses a Macintosh-like user interface that makes it easy to select portions of text to be moved, underlined, boldfaced, justified and more. According to its vendor, the program is fast, reliable and easy to use. The program uses visual format rulers to easily set tab stops, margins, and paragraph indentations on screen.

Other features include built-in mail merge, automatic envelope addressing, easy to share data with AppleWorks and other word processors and takes advantage of most extended memory cards by allowing for large text files.
$99.95 retail
Sensible Software, Inc.; 335 E. Big Beaver, Ste. 207; Troy, MI 48083; 313-528-1950

WordPerfect For The Apple IIGS

Word Processor
Apple IIGS; 512K; two disk drives or a hard disk drive recommended; additional memory card recommended.

WordPerfect for the Apple IIGS provides more than 110 word processing features. In addition to a 115,000-word speller and a thesaurus, the program offers footnotes and endnotes, headers and footers, mail-merge, macros and dozens of formatting features.

The program has a mouse interface with pull-down menus and multiple documents on-screen. Users can edit an unlimited number of documents at the same time and take advantage of any extra memory available.

Other features include bold, underlining and centering; advance up or down a half of a line; center page top to bottom; widow/orphan protection; on-line help; page up and down; scroll horizontally and vertically; and delete character left and right.
$179 retail
WordPerfect Corp.; 288 W. Center; Orem, UT 84057; 801-225-5000

Writer's Choice elite

Graphics/text word processor
Apple IIGS.

Writer's Choice elite is a word processor that allows a user to combine graphics and text. It can be used with Paintworks Plus, Draw Plus, Clip Art Gallery or other compatible graphics programs to create custom reports, memos, letters, fliers and more.

Key feature include full graphic integration with leading Apple IIGS software; mouse interface and pull-down menus; 16 document windows available to work on several documents at once; full-color capabilities including highlighting and crossed-out text; printing in 16 colors; and ruler formatting, including single, double and triple spacing.
$89.95 retail
Activision, Inc.; 2350 Bayshore Pkwy.; PO Box 7286; Mountain View, CA 94039; 415-960-0410

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34880 Bunker Hill
Farmington, MI 48331-3236 dsr

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In about the time it takes to read this headline, you can have the Finder up and

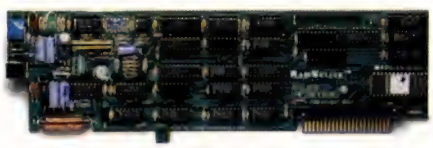
Now your favorite program can be ready to go seconds after you flip your Apple IIGS on.

With Applied Engineering's RamKeeper™ card, your IIGS retains stored programs *and* data when you turn your computer off.

RamKeeper powers up to two memory cards simultaneously when your Apple IIGS is off. And battery backup keeps power to the boards even during power failures. Your programs and data are stored in a permanent, "electronic hard disk," always ready to run.

Superior power backup.

Applied Engineering has the most experience in battery-backed memory for Apple computers. We were the first to offer battery-backed memory with our RamFactor™/RamCharger™ combination. Now RamKeeper sets the standard for IIGS memory backup.



RamKeeper lets you keep programs and data in permanent, "electronic hard disk" memory. Turn your Apple IIGS on and you're ready to work.

Our experience shows in the way we designed and built RamKeeper. We used sealed Gel/Cell batteries — far more reliable than Ni-Cads in this application. Ni-Cads lose much of their capacity if they're not discharged periodically. Just when you need them most, Ni-Cads could run out of power.

Our Gel/Cell pack, which is included in our price, gives you up to six hours of total power failure backup. That's about 6 times longer than other systems.

RamKeeper uses a Switching Power Supply — the same technology used by Apple for the IIGS power supply. This design uses energy much more efficiently to keep your Apple running cooler.

Our sealed Gel/Cell battery

stays *outside* your computer case. With other systems, the batteries are installed under the IIGS power supply where a leak could ruin computer circuitry.

Put two memory boards in the same slot.

You might have bought your IIGS with Apple's memory card. But now you want the features of Applied's GS-RAM™ card. RamKeeper efficiently resolves the dilemma.

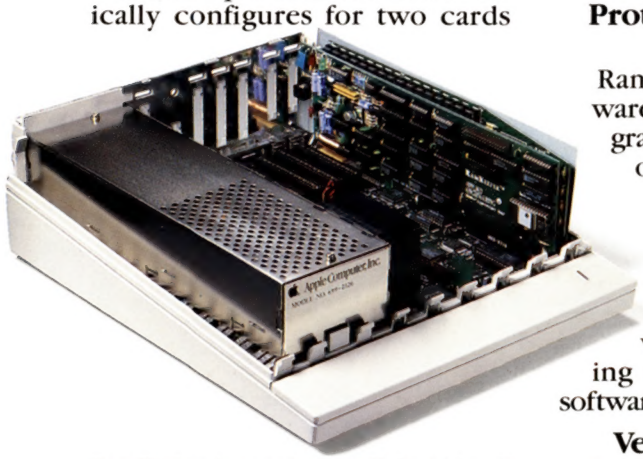
You can use RamKeeper with your current IIGS memory card *and* add another memory card — all in the same slot. Just attach your current memory card to one side of your new RamKeeper card, connect the second card to the other side and plug RamKeeper into the slot.

Of course RamKeeper works fine with just one memory card. But you can use two and still keep Slot 7 open with our optional Slot-Mover.

Makes all of your memory usable memory.

RamKeeper can power up to 16 Meg of memory. Other systems are limited to only 8 Meg. In addition, RamKeeper lets you mix and match different types of cards. For example, you can have a GS-RAM Plus™ using 1 Meg RAM chips and an Apple card using 256K RAM chips. Other systems are limited in the combinations they allow.

RamKeeper firmware automatically configures for two cards



RamKeeper is easy to install. Just plug it in. Even when you use two memory boards, you don't have jumpers. You can have two memory boards but use only one slot.

It all comes with RamKeeper ... board, Gel/Cell battery pack, easy-to-understand instructions, and Applied's powerful AppleWorks Expander software.

when the second card is installed. Other systems make you manually move jumpers.

RamKeeper configures memory linearly. Other systems don't, so they create memory gaps that can cause program crashes or keep some programs from using as much as half of your memory.

You easily decide how much memory you'll devote to ROM and to RAM from the IIGS Desk Accessories menu. You can configure Kilobtyes or Megabytes of instant ROM storage for your favorite programs. And you can change ROM size any time without affecting stored files.

Protected from program crashes.

RamKeeper controlling firmware is in an EPROM. A program crash can't take out the operating software. With other systems, operating software is installed in RAM from a floppy. If the program crashes, it can take the operating software with it; and reinstalling the disk-based operating software destroys data in memory.

Verifies data security.

RamKeeper firmware uses optional startup checksums to verify that no data has been lost while power was off. The firmware also runs ROM and RAM memory tests without disturbing data on the card.

Free AppleWorks Enhancement software.

Applied's powerful AppleWorks Enhancement software is free with RamKeeper. It makes AppleWorks faster and far more powerful by eliminating AppleWorks internal memory limits. Word processor limits go from only 7,250 lines to 22,600 lines. Database limits go from 6,350 records to 22,600 records. The clipboard size limit is increased from 255 to 2,042 lines. It even automatically segments large files so you can save them on multiple floppies. No other company expands your IIGS' AppleWorks internal limits.

In addition, the most powerful disk-caching program available comes with the RamKeeper. The cache significantly increases access time to the Apple 3.5 Drive. Most applications will run up to 7 times faster.

The largest maker of Apple expansion boards.

Applied Engineering has sold more expansion boards than anyone else. And we've been in business 8 years, long enough to see the vast majority of our competitors come and go.

All of our products are crafted in the U.S.A. We back RamKeeper with a five year parts and labor warranty. And a 15-day, no questions asked, money back guarantee.

Only $189.00.

See your dealer. Or call 214-241-6060, 9 a.m. to 11 p.m. 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA, C.O.D. welcome. Texas residents add 7% sales tax. Add $10.00 outside U.S.A. Prices subject to change without notice.

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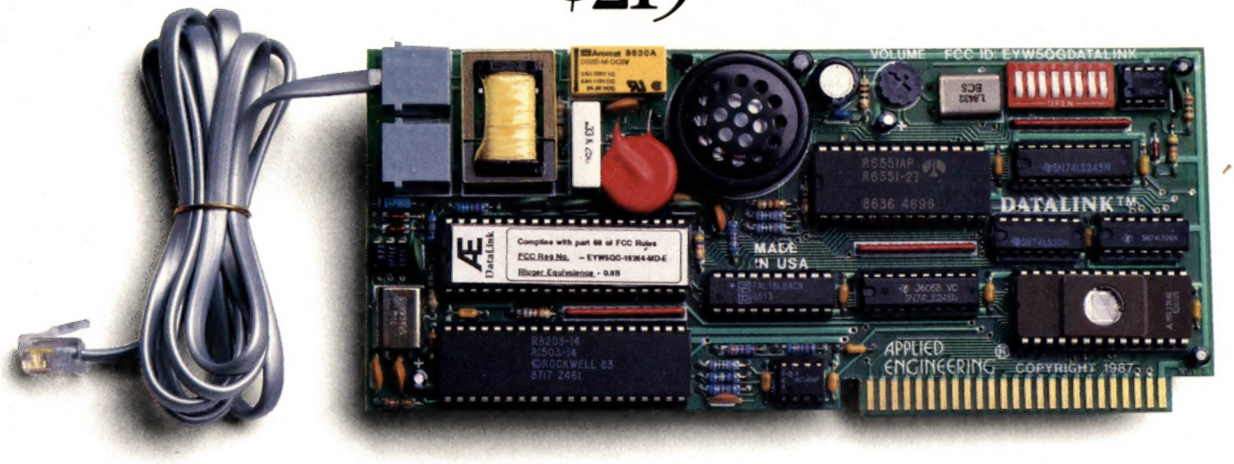

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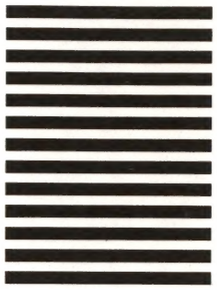

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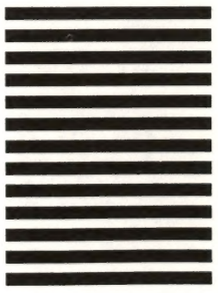

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